DESCRIPTIONS OF NEW GENERA AND SPECIES OF PLANTS COLLECTED ON THE MULFORD BIOLOGICAL EXPLORATION OF THE AMAZON VALLEY, 1921–1922

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(WITH EIGHT TEXT-FIGURES)

The itinerary of the Mulford Expedition was fully described, and a general account of the floral features of the regions traveled was given in the *Journal of The New York Botanical Garden* for August, 1922, pages 101–112. For the benefit of those who have not this publication at hand, the following brief résumé is presented.

Collections began in early July at Pongo de Quime, a settlement just across the crest of the eastern Cordillera, at an altitude of some 15,000 feet, about 40 or 50 miles east of Eucalyptus, a station on the Antofagasta-La Paz Railroad, and at the head of the Quime River. As a matter of fact, the very first plants, cactus and *Caiophora,* were collected at a point more than a thousand feet higher. At that season, the beginning of winter, and at that altitude, the edges of the streams in the vicinity were ice-bound, but these plants, cuddled under the edges of rocks, and exposed to strong sunshine, managed to expand their brilliant blossoms. The journey from Pongo to Canamina, having an altitude of 3,500 to 4,500 feet, lay alternately along the valley streams and across high ridges, and occupied about four days. During this time, I was extremely ill and without any great hope of surviving to reach my destination, so that collecting was impossible and but little note could be taken of my surroundings. Dr. White, who followed a few days later, made a small but interesting collection along this route. From Canamina to Espia, about 500 feet lower, the journey lay along the Canamina and Meguilla Rivers. Both at Canamina and along this route, we made rather extensive collections. At Espia, where the Meguilla

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BRITISH POISONOUS PLANTS.

Poisons may be classed as producing their deleterious effects by three different modes of action. Some are injurious in consequence of the inflammation they occasion in the parts or organs with which they come in contact, and are known as *Irritants*: others, without producing any immediate change on the surface that receives them, act upon the brain and nervous system, inducing a tendency to insensibility or torpor, resulting from over-excitement; these are *Narcotics*: while the third class, a much more numerous and dangerous series, partakes of both the previous characters, and includes those denominated *Narcotic-irritants*. The vegetable kingdom yields examples of all these, and more especially of the last. To the general reader, the interest attaching to this classification of effects may not appear to be of much importance, but in a medical point of view its value is great, as the treatment of patients, for the alleviation of their sufferings, is necessarily modified to the nature and action of the poison swallowed.

In all cases of poisoning or suspected poisoning, medical

species of Vetchling are poisonous, but their wholesomeness may be doubted.

CUCURBITACEÆ, the Cucumber Tribe,

has a single representative among our wild plants in the

Red-berried, Common or White Bryony, *Bryonia dioica*. Plate VI.

This is a vine-like plant, growing in woods and hedges, and is exceedingly common. The stems climb by means of tendrils, and extend among the trees and shrubs, often to the length of several yards during the summer, dying away after ripening their fruit; they are, as well as the somewhat vine-shaped leaves, very rough to the touch, a general character of the exotic plants of the order. The flowers are small, greenish, and produced, generally three or four together, in little bunches. Stamens and pistils are never found in the same flower, nor are the flowers which bear them individually ever met with on the same plant in this species, whence the name *dioica*, signifying literally two dwellings. The berries, when ripe, are red, filled with juice of an unpleasant fœtid odour, and each contains six comparatively large spotted seeds. The large fleshy pale-coloured root is often seen suspended in herb-shops, occasionally trimmed into a rude human form. It is a powerful and highly irritant purgative, a decoction of which is sometimes recommended by self-constituted medical advisers, but dangerous to their patients. The berries eaten by children have produced vomiting; but although this plant is generally

GARDEN NIGHTSHADE.—SOLANUM NIGRUM.

life, and with no greater efficacy than cathartics of a milder character. The greatest evil may accrue from following the directions of self-constituted medical prescribers, whose sole authority and library of reference is often the once far-famed "Culpepper's Herbal," or some equally valuable book of recipes. The Lady Bountiful of the village would do more good by confining her benevolent practice to the issue of nourishing food and warm clothing, where necessary, than by attempting to combat disease by remedies of which the action is equivocal, if not, as in this instance, dangerous in the highest degree. The hint is intended as a general caution, but it is based upon a fact connected with the use of the plant before us.

EUPHORBIACEÆ, The Spurge Tribe,

is a natural order of plants of great extent, and distributed over most parts of the world. The leading characters of these plants are the acrid milky juices, and the cathartic oil abounding in the seeds of many. The first especially renders them unwholesome, and in many instances highly poisonous, a property of which the oil frequently partakes. The distinctive features, by which the species of the order are recognized by an accomplished botanist, are too liable to exceptions to be satisfactory to the general observer. The British plants belonging to it are the Box, the Spurges or Wart-weeds, and the Mercury. The Box, well known as an evergreen shrub, and in its dwarfed state as an edging for garden-walks, does not show the milky juice, except on the early expansion of the leaves; but is said to be poisonous to animals that browse upon it in the wild state. Of the indigenous species of Spurge or Wart-weed, we only figure one.

and La Paz rivers unite to form the Bopi, we remained for some time, awaiting rafts. Unfortunately, this occurred during the dry season and the conditions were extremely arid at this point, so that but few specimens were obtained. From Espia, the remainder of the journey was entirely by water, until we reached Rurrenabaque, having an altitude of about 1,000 feet, and lying among the foothills at the eastern base of the Andes. The flora of the stupendous mountains amidst which this river winds its tortuous course is wonderfully rich and must contain hundreds of unknown plants, but owing to the forced rapidity of this portion of our journey, our collections had to be confined almost wholly to the river margin. At Huachi, near the head of the Beni River, we made a stop of several weeks and collected energetically, not only in the river valley, but among the neighboring mountains. A very rich and interesting collection was here obtained. The journey thence to Rurrenabaque was again a rapid one, but at the latter point, we stayed for many weeks and made large collections. From here an overland journey was made to Lake Rogagua, in the midst of the pampas, and about midway between the Beni and the Mamoré Rivers. This trip occupied the latter part of October. Although it was early spring and flowering plants were not abundant, we collected industriously, both going and returning. Arrived again at Rurrenabaque, we found the November flora exceedingly rich and attractive, and accumulated a large collection. Considering the fact that I had collected extensively in this region in 1886, that Mr. Bang had spent much time there during many seasons, sending me large numbers of his plants, and that Mr. Williams had also done considerable work in the same region, I was hardly prepared to find the collections made there on this occasion presenting so large a proportion of novelties as is the case. It is my opinion that we do not yet know much more than half of the flowering plants of that locality.

After my separation from the party, in December, Dr. White and Mr. Cardenas continued collecting. They also made important journeys to Tumapasa and Ixiamas, and did considerable collecting on the lower Beni and its tributaries in January and February of 1922.

The study of the Mulford Collection of plants has occupied all the spare time of the writer since his return in February, 1922. Progress has been delayed for the reason that much critical study has been devoted to the previous collections of related plants of the same region, made by Miguel Bang, R. S. Williams, Otto Buchtien, myself, and others. My intention has been to publish a comprehensive account of all these collections, giving their geographic range, ecologic conditions, and economic relations, with special attention to the transition flora between the forested regions and the pampas, a study of the greatest interest. This undertaking is so extensive, and my time is so limited, that it now appears desirable to effect publication of the new forms already determined and later to continue with the more comprehensive work.

It is not to be understood that the present publication will exhaust the list of either new genera or species of the Mulford collection. The 2,400 collection numbers probably represent about 1,500 species. Of these, more than a tenth have been laid aside until the conditions are more favorable for their exact determination. Doubtless a large part of them will be found without published names or descriptions, and several new genera will probably be found among them. In the meantime, it seems highly desirable that the many botanists now working on tropical American plants should possess what information I can supply regarding those already studied.

The following facts should be understood as applying to all the species herein described.

Unless otherwise stated, (1) all were collected in Bolivia, and all by the Mulford Exploration, and they should be so cited; (2) all names are of my own authorship; (3) all type-specimens are to be found in the herbarium of The New York Botanical Garden.

Owing to a degree of physical incapacity, I was unable to exert myself on this as on previous journeys, so that the number of duplicates available for distribution was relatively small. Dr. Orland E. White, of the Brooklyn Botanic Garden, and Mr. Martin Cardenas, a botanical student encouraged and aided by the Bolivian National Department of Education, were exceed-

plants; a fact that may possibly be owing to the immediate emetic effect resulting from their action. Dr. A. S. Taylor mentions an instance of a young lady, of the age of fifteen, who, after eating several stems and flowers of *Ranunculus bulbosus*, and chewing many more, sucking the juice, suffered greatly during eight days, exhibiting many of the symptoms of acrid poisoning and even delirium. This plant, the earliest Buttercup of the meadows, has a small roundish root, somewhat resembling that of a turnip-radish, but, as it is rarely met with in any other situation than those in which it forms a part of the general vegetation of our fields, and its flowers are so universally known, this caution against eating it or any others of its tribe may be sufficient. The acrid principle of the field Buttercups is so volatile as to be chiefly, if not entirely, dissipated by drying: hence, when mingled with the grass in making hay, they are not only harmless, but, owing to the abundance of mucilage contained in their stems, contribute to the nutritive quality of the fodder.

The wood Anemone, *Anemone nemorosa*, so common, and so conspicuous by its white flowers in our woods in April, and the Pasque Flower, *Anemone Pulsatilla*, ornamenting about the same time with its deep purple hairy blossoms our chalk hills and high open pastures, are equally acrid with the Buttercups. But it is when this acridity is associated with a narcotic proximate principle that the Crowfoot Tribe is most dangerous and fatal to human life. The most recent case of accidental poisoning, to which this little book owes existence, was due to a plant of this series, a frequent ornament in the garden and shrubbery: viz.—

Monkshood, **Aconitum.**

There are many species of this genus or family of the *Ra-*

TELANDRIE. — CHELIDONIUM MAJUS

MEZEREON — DAPHNE MEZEREUM

HERB PARIS. PARIS QUADRIFOLIA.

ingly energetic and untiring in their work, but could not fully supply the deficiency in my service. The duplicates secured, about 15,000 in number, have been distributed with great care by the H. K. Mulford Company to the Brooklyn Botanic Garden, the United States Department of Agriculture, the Gray Herbarium of Harvard University, and the Philadelphia Academy of Natural Sciences, in this country, besides small sets to the Field Museum and to several specialists. Besides small packages sent to various European specialists, rather large sets have gone to the Royal Botanic Garden at Kew, the Berlin Botanic Garden, and the National Museum at La Paz, Bolivia.

The collection here described is of peculiar interest, because of its many structures which disagree with existing knowledge of the respective groups to which they belong. A diandrous *Costus,* a scandent *Ruprechtia,* an arborescent *Acacia* with climbing branches, a *Borreria* bearing glands on the face of its petals, a dioecious *Seemannia,* a *Solanum* with sagittate dehiscent anthers and the filaments of *Bassovia,* are but a few of the anomalous structures described in the following pages, which start one on fresh speculations as to the nature of generic limitations. In reviewing these phenomena, as well as many which relate to specific demarcations, one can but smile when he thinks of the dictum that constitutes the stronghold of "anti-evolutionists," that everything is made after its kind and stays so made!

DESCRIPTIONS OF NEW GENERA AND SPECIES

Alismaceae

Alisma boliviana

Glabrous. Leaves numerous, erect when young, later spreading widely, the petioles to 6 cm. long, slender. Blades 2 to 3 cm. long, 6 to 9 mm. wide, lance-oblong, acuminate and acute, the base very gradually tapering into the petiole. Inflorescence much exceeding the leaves, mostly compound, peduncled, the whorls sometimes with more than 20 flowers, bracted, the bracts sessile, broadly ovate and acute. Pedicels very unequal, to 3 cm. long, filiform, the base of the flower truncate, slightly intruded. Sepals 2 mm. long, broadly ovate, acute, thick. Petals white, hyaline, twice the length of the sepals. Stamens 6, the anthers

white, broad and thin, equaling the sepals in length. Pistils 1 mm. long, the very short, slightly recurved style subterminal, at the inner edge of the summit.

On the margin of a lake near Reyes, 1000 feet, *Rusby and White,* October 25, 1921 (*no. 1540*).

This species grows in company with *A. tenella* Mart., and so closely resembles it that some doubt existed at first as to their representation of two species.

Araceae

Xanthosoma syngoniifolia

Stems, petioles, etc., scabrellate. Rhizome densely tuberiferous, compact, bulbiform, about 4 cm. broad, the roots emanating from its upper surface. Basal sheaths several, 3 to 6 cm. long, triangular, acuminate and acute, rigid, finely many-nerved. Petioles to 6 dm. long, erect, slender, gradually and regularly broadening downward into a sheath. Leaf-blades thin and membranaceous, trifoliolate, the middle lobe sessile, entire, 15 to 20 cm. long, 5 to 10 cm. broad, obovate with cuneate base and very short-pointed acute summit, pale beneath, the venation slender, reticulate, the principal secondaries about 8 or 10 on each side, their ends united by an undulating intramarginal line, another similar but more slender line close to the margin; lateral leaflets on short unequal winged petiolules, of two leaflets, the inner mostly sessile, the outer with a short petiole-like base, occasionally bearing a small basal leaflet or lobe on the outer side; segments all similar to the terminal, except that the outer are successively smaller and indistinctly dentate. Peduncle solitary (?), nearly as long as the leaves, slender, fleshy, distinctly articulated above the middle, where it is sharply deflexed, the joint fissured and open on the inner side and glandular. Spathe somewhat exceeding the spadix, convolute, at maturity straight, 15 cm. long, constricted at the summit of the lower third, which is closed about the pistillate inflorescence, the edges widely overlapping; in its closed form, ovoid and a little broader than the upper portion, which is 3.5 cm. broad, lanceolate or ovate, somewhat concave, acuminate, acute, thinner than the basal portion, greenish-white. Spadix adnate to the spathe by the dorsum of its base, its pistillate lower portion about 2.5 cm. long, about 1 cm. broad; sterile portion a little longer, about half as thick, scaly at the base, narrowed upward; staminate portion 7 or 8 cm. long, nearly 1 cm. thick, narrowed at base and summit.

Ovaries wholly distinct, obconic, the white terminal disk-like body wider than the ovary. Stamens 6, coherent at the summit into a disk-like whitish body which is vertically elongated, rhomboidal, about 4 mm. long and 2 mm. wide.

Collected by Martin Cardenas, in copses on the pampas near Lake Rogagua, 1,000 feet, November, 1921 (*no. 1436*) and at the same place on November 7 (*no. 1693*).

Species allied to *X. helleborifolia* Schott.

Taccarum caudatum

Glabrous throughout. Petiole and peduncle arising together from the summit of the corm; when young, both enclosed in a broad obtuse membranaceous, and at length scarious sheath. Petiole 8 dm. long, 3 cm. thick at the base, 1 cm. at the summit, terete, green or purplish-blotched. Leaf peltate, 3-parted, the divisions 3 dm. long and as broad or broader, sessile, bipinnate, the pinnatifid pinnae separated by one or more small simple ones. Ultimate segments very unequal, the lower smaller, lanceolate or oblanceolate, acuminate and acute, entire, bright-green, the midrib and secondaries impressed above, prominent beneath, the latter 3 or 4 on each side. Relative length of peduncle variable, usually about 2 dm. long, about half as thick as the petiole, terete. Spathe convolute below, open above, extending to the base of the staminate portion of the spadix, thin, inflated, becoming scarious, and at length deciduous, broadly obtuse at the summit, the base very oblique, one side dropping much below the base of the spadix. Pistillate portion of spadix 1 dm. long, 1.5 cm. thick, densely flowered. Staminate portion nearly 2 dm. long, 1 cm. thick at the base, tapering regularly to the summit, not very densely flowered, deciduous or decaying after flowering.

Staminate Flowers.—Stamens 10, contiguous but distinct or nearly so, borne on a stipe 1 cm. long, this thickened upward, where it is irregularly sulcate, green or purplish, the summit expanded into a fleshy receptacle with tumid summit slightly surpassing the anthers and of blackish color. Anthers oblong, sessile, so crowded as often to be forced out of position, 2 mm. long, the mass 4 mm. broad.

Pistillate Flowers.—Sessile, subtended by 4 or 5 staminodia, which are appressed and about two-thirds the length of the ovary, their lower portions pale, thin, 2.5 mm. broad and nearly triangular in form, connate beneath the ovary, the upper portion

purple, narrowed, and the obtuse summit dilated. Ovary bright-green, 5 mm. broad and about half as long, 4- or 5-lobed, the lobes rounded on the back, the summit nearly plane. Style 4 mm. long, stout, white, fleshy. Stigma yellow, glutinous, 2.5 mm. broad, lightly 4- or 5-lobed.

Corm 8 cm. broad, 3.5 cm. high, the base broadly rounded, the summit nearly plane, surmounted by a dark-colored disk 3 cm. broad and 1 cm. high, from which emanate a number of thin white rhizomes about 6 cm. long, which bear the fibrous roots.

The description is drawn from the living plant in the conservatory of The New York Botanical Garden. Collected by the author at Rurrenabaque, 1,000 feet, October, 1921. Growing in damp soil along a roadside through the forest. Also collected by O. E. White in the same locality, November 30 (*no. 2302*), and at Huachi, 3,000 feet, September 24 (*no. 1077*). Species nearest to *T. Hasslerianum* Chodat, which has a similar slender staminate portion of the spadix.

In Bolivia, this corm is known as "solimán," a name that is applied to a number of Araceous rhizomes, as well as to *Hura*. These Araceous products are said to be used in the manufacture of arrow-poisons, but the native information regarding their use appeared rather indefinite.

MAYACACEAE

Mayaca boliviana

Glabrous, with the exception of a few scattered hairs upon the leaf-bases. Stems mostly 3 to 5 cm. long, stout, pale-green, densely leafy. Leaves deep-green, sessile, 3 to 6 mm. long, the larger nearly 1 mm. wide at the base, tapering regularly from the base to the attenuate summit, the slender midrib prominent. Peduncles slender, erect-spreading, 4 to 6 cm. long. Sepals strongly reflexed, 3 mm. long, less than 1 mm. wide, tapering regularly from the base, obtusish. Petals 5 mm. long and wide, obovate with rounded summit, deep-pink, finely 7- to 9-nerved. Stamens 3 mm. long, the slender filament a fourth of the length and about as long as the broad terminal appendage, which at length divides into two. Ovary about as long as the filaments and as broad as long, the filiform style a little longer than the stamens, the stigma obscurely 3-lobed.

Growing in muddy margins of pools, in small clumps, not common, at Ixiamas, 700 to 800 feet, *O. E. White,* December 17, 1921 (*no. 2312*).

Bromeliaceae

Aechmea ellipsoidea

(Fruiting specimen.) Lower leaf-surfaces and younger parts gray-furfuraceous, the inflorescence white-floccose. Leaf (but one seen) probably 8 dm. or more long, the lower portion wanting, 5 cm. wide, ligulate, shortly and stoutly cuspidate, serrulate with falcately ascending pungent teeth about 2 mm. long and a little more than 1 cm. apart; thin and semi-rigid, finely many-nerved and lightly channeled, pale-green above, gray-green and moderately furfuraceous beneath. Stem (only the upper 3 dm. seen), stout, erect, densely clothed nearly to the summit with erect or appressed, imbricated bracts, the uppermost and smallest of which is 4 or 5 cm. long and more than one cm. wide, lanceolate, with clasping base and attenuate summit. Spike solitary, terminal, ellipsoidal, 7 cm. long, 3 cm. thick, the flowers densely crowded. Peduncle short, very stout, densely floccose, the rachis 2 mm. thick. Bracts floccose, closely enclosing the capsule, 2- or 3(?)-lobed, concave on the back, where the neighboring capsule adjoins it, the concavity winged. Capsule 1.5 cm. long and half as wide, ovoid, somewhat angled. Persistent calyx-lobes 6 mm. long, black, minutely papillose, ovate, obtuse, erect, thick and coriaceous. Seeds 3 or 4 mm. long, stipitate, compressed-triangulate, obtuse, papillose.

Near Asunto, 2,800 feet, *O. E. White,* August 6, 1921 (*no. 633*).

"Common in leaf-mould, in damp shady woodlands; about 4 feet high."

Guzmania obtusa

Pale-green, glabrous and appearing as though glaucous. Leaves densely imbricated at the base, mostly shorter than the spike, to 17 dm. long and 3 cm. wide, linear-oblong, or oblanceolate, acute, dilated at the base, thin, finely many-nerved. Stem in my specimen about 2 dm. long, inclusive of the spike, stout, completely clothed with imbricated and appressed bracts about 3 cm. long and 1 to 2 cm. wide, the lower ovate, acuminate and acute, the middle obtuse but with a terminal awn, gradually pass-

ing into the floral bracts, which are more than 3 cm. broad and but little longer, and obtuse, thin, and reddish or purple. Calyx 2 or 2.5 cm. long, the sepals rigid, lanceolate, attenuate, the corolla one cm. longer. Stamens and style about equaling the petals, or nearly so, the style blackish below, white toward the summit.

Rurrenabaque, 1,000 feet, *O. E. White,* November 25, 1921 (*no. 1811*).

"Epiphytic on trees in dark shady ravines."

Smilacaceae

Smilax flavicaulis

Glabrous, the stems terete, light-yellowish-brown, finely many-ribbed. Spines few, strongly compressed laterally, small and nearly as broad as long. Tendrils simple, terete, not greatly elongated, borne near the middle of the petiole, which is 1.5 to 2 cm. long, flattened, the margins strongly involute, the base clasping and spinose-auriculate. Leaf-blades 7 to 15 cm. long, 4 to 8 cm. broad, varying from lanceolate or even oblong to broadly ovate, mostly acute, with rounded or truncate base, thick and coriaceous, the venation sharply prominent on both sides, especially beneath, a pair of strong nerves or ribs starting at some distance above the base and converging at the apex, a pair of slender nerves starting very near the base and becoming submarginal, all connected by a strong and close reticulation. Peduncles simple, axillary, 2 to 4 cm. long, slender, strongly vertically flattened. Umbels simple, densely many-flowered, the pedicels about 1 to 1.5 cm. long, more or less flattened, ribbed, the basal bracts numerous, shortly triangular, subulate, acute. Flowers not seen. The young fruits are shortly and stoutly stipitate.

In dry places on the pampas about Lake Rogagua, 1,000 feet, *H. H. Rusby,* November 8, 1921 (*no. 1698*).

Amaryllidaceae

Atamosco microcarpa

Glabrous. Bulb spheroidal, 2 to 3 cm. long. Leaves 1 dm. or more long, sometimes equaling or exceeding the flower, narrowly linear, obtuse. Scape filiform, one-flowered. Bract solitary, 2 cm. long, 2 mm. wide, lance-linear, the summit bifid, the teeth obtuse. Peduncle filiform, 3 cm. long. Ovary 2 mm. long.

broadly oval. Perigone scarcely declined, 3.5 cm. long, apparently divided about half way to the base, the lobes 5 or 6 mm. broad, acutish. Stamens unequal, the longest nearly twice as long as the shortest, the anthers about 3 mm. long, strongly recurved. Style filiform, erect, 5 mm. longer than the longest filament, the linear branches recurved. Leaves fully formed at the time of flowering. Flower pink.

Among the grass on open pampa, near Lake Rogagua, 1,000 feet, *M. Cardenas,* November 1, 1921 (*no. 1396*).

LEPIDOPHARYNX gen. nov.

Tube of the perigone very short, clothed with scales within at the summit. Perigone declined or deflexed at the base, the segments elongated, linear, spreading. Petals and sepals similar, the petals narrower and slightly longer, the upper sepal and two upper petals slightly longer than the others. Crown reduced to a ring of scales in the throat. Stamens 6, a little shorter than the longer petals, the alternate ones differing slightly in length. Filaments dilated at the base, but distinct except where adnate to the perigone tube. Anthers oblong, attached near the middle, apparently versatile. Ovary wholly inferior, 3-celled, the ovules anatropous, numerous, in two series in each cell. Style filiform, exceeding the perigone. Stigma dilated upward, truncate, obscurely 3-lobed. Capsule loculicidal. Seeds anatropous, very numerous, triangular, vertically flattened.

Bulb solid, tunicated. Leaves all radical, erect, oblanceolate, appearing with the flowers or later. Scape naked, hollow. Flowers in a terminal umbel, apparently always 4, diverging in pairs. Involucre double, the outer of two lance-linear bracts, which are at length reflexed, the inner of (always?) 4, which are narrower, and erect. Pedicels elongating during and after flowering, the ovary at first more or less reflexed, becoming erect, straight or at first somewhat curved. Flowers looking obliquely or even directly downward, deep red, the lower portions sometimes greenish, the outer portions lighter red or orange.

Genus near *Elisena* and at first mistaken for it, but all the species of that genus have white flowers, with a distinct crown, here represented by an irregular collection of scales in the throat.

Lepidopharynx deflexa

Bulb ovoid, about 7 or 8 cm. long and nearly as broad, some of the inner scales slightly pilose at base. Leaves to 3 dm. or

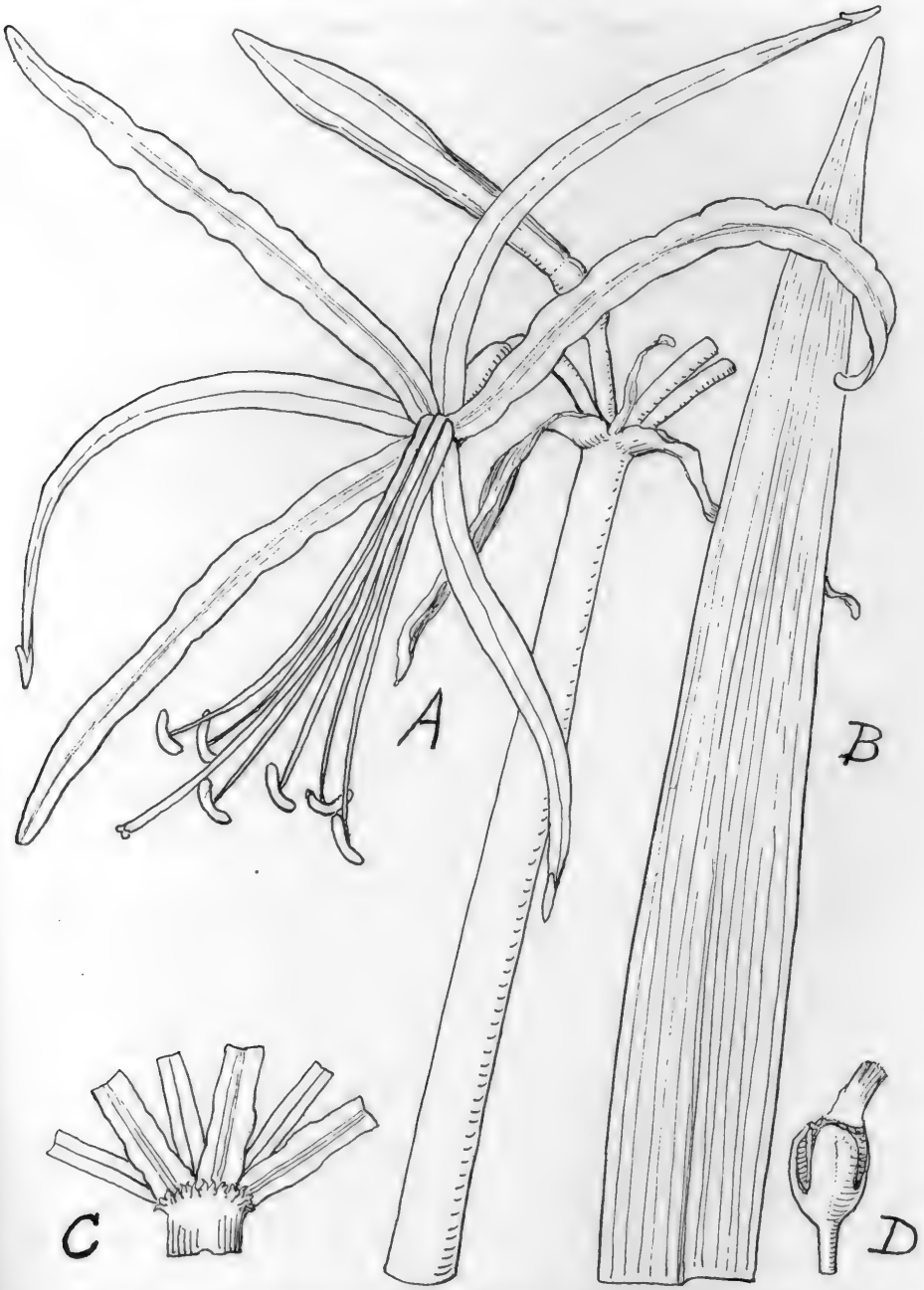

FIGURE 1. *Lepidopharynx deflexa* Rusby. A, umbel of four flowers, the two at the right excised; B, inner face of perigone-tube, showing scales; C, upper portion of leaf; D, partially matured capsule, showing loculicidal dehiscence; (all natural size).

more long, 2 cm. broad, oblanceolate, acuminate, but obtuse, entire, glabrous, thickish, about 40-nerved. Scape about 6 dm. high, nearly 1 cm. thick at the base, regularly narrowed upward, terete, apparently hollow. Outer bracts 5 or 6 cm. long, slightly imbricate at the base, from which they taper regularly to the acute summit, thin and membranaceous, many-nerved, spreading and at length reflexed. Inner bracts erect, narrower and shorter. Pedicels rather slender, straight or nearly so, about 2 cm. long, in flower. Ovary nearly 1 cm. long, oval or slightly obovoid, slightly triquetrous, 6-nerved. Longest sepal 8 or 9 cm. long, 6 or 7 mm. wide at the base, from which it tapers regularly to the summit, red with a deeper-colored broad middle portion, the others slightly shorter. Petals similar but narrower and more attenuate. Anthers 3 mm. long. Style and stigma 1 cm. longer than the longest petal, the stigma 8 mm. long, white and hyaline. Capsule, immature but dehiscing under pressure, 1 cm. long and nearly as broad.

Espia, 3,500 feet, *H. H. Rusby,* August 8, 1921 (*no. 150,* the type). Growing on steep rocky banks in partial shade. Very showy.

The same collected without bulb or leaves, by M. Bang at Songo, November, 1890 (*no. 918*). Buchtien's No. 3155, from Cotanya, Ilimani, 2,450 meters, November, 1911 (*no. 3144*), has larger flowers, with shorter pedicels, but is probably the same.

Bomarea petiolata

Lower leaf-surfaces and inflorescence lightly puberulent. Stems elongate, slender, reclining or drooping, strongly sulcate in the dried state. Petioles 1 cm. long, thinly margined, the blades 4 to 7 cm. long, 2 to 3 cm. wide, lance-oblong, the base very abruptly contracted into the petiole, acuminate and acute, the principal nerves 7 to 9, with as many finer intermediate ones. Umbel terminal, compound, 4-branched, in my specimens, the branches 2- to 3-flowered, the bracts lanceolate, 2 cm. long, abruptly contracted into an attenuate point. Branches of the umbel slender, 3 to 5 cm. long, the bractlets similar to the bracts, but much smaller, the pedicels slender, shorter than the flowers, which are nearly 3 cm. long, and 2 cm. broad as pressed, campanulate and lightly curved. Sepals obovate, rose-colored externally and cream-colored within. Petals of about equal length, cream-colored with fine purplish spots, spatulate, the lower third being narrowed into a claw. Filaments puberulent. Ovary very

small. Style stout, nearly equaling the perigone, the three recurved stigmas about 2 mm. long.

"A vine, 10 meters long, in cultivated ground." The petioles are more or less twisted, as though affording support to the stem.

Ivon, 800 feet, *Martin Cardenas,* February 19, 1922 (*no. 2071*).

Species near *B. edulis,* but peculiar in its well-developed petioles.

Dioscoreaceae

Dioscorea oblongifolia Rusby, Bull. N. Y. Bot. Gard. **6**: 492.

(Specimen in fruit.) Glabrous, the stems slender, terete, reddish. Petioles 2 cm. or more long, reddish, strongly channeled above and shallowly 2-sulcate beneath. Blades 5 to 7 cm. long, 2.5 to 5 cm. wide, ovate, abruptly very short-pointed and acute, lightly cordate, 7-costate, the lowest pair of ribs very short, the second pair terminating in the margin about midway, the third pair meeting at the summit, all connected by numerous crooked, slender secondaries, the venation prominent beneath. Leaves pale-green, especially beneath, thickish and rigid. Only the lowest branch of one panicle seen. Common peduncle 1 dm. long, slender, reddish. Branch 3 dm. long, pendulous, the rachis very slender, the branchlets 5 to 7 cm. long, somewhat distant, peduncled, the peduncles lightly nodose. Fruits on very short, thick recurved pedicels, about 2 cm. broad and 1 cm. long, subtruncate at both ends, the margin thickened, the wings thin and pale-brown, the veins very numerous, faint.

In copses of the pampas about Lake Rogagua, 1,000 feet, *Martin Cardenas,* November 4, 1921 (*no. 1629*).

Dioscorea ferruginicaulis

Ferruginous throughout, especially the stems, with exceedingly short, dense, somewhat glistening hairs. Stems slender, sulcate, of a bright, light rust-color. Petioles similar, very slender, 5 to 7 cm. long, strongly sulcate, the blades 4 to 7 cm. long, and about as wide, ovate, cordate, with broad shallow sinus, the summit abruptly produced into a short, acute, twisted point; entire, very thin, light-green, slightly ferruginous, pale beneath, slenderly and sharply 11-costate, the lowest two ribs on each side

connate near the base, the five central ones conniving at the summit, the others gradually terminating in the margin, all connected by slender nearly straight secondaries and by a fine reticulum of veins. Only the floral leaves are present, the upper ones successively reduced. Racemes several in the axils, mostly sessile, unequal, the longer 1.5 dm. long, slender, rather densely flowered, the bracts thin, lanceolate, acuminate, about 2 mm. long, the bractlets similar or a little smaller, the branchlets 3- or 4-flowered. Flowers sessile, about 2 mm. long, the petals slightly shorter than the sepals, ferruginous with lighter margins, much thickened at the tomentose base, where the filaments are attached. Stamens shorter than the perigone, the anthers small. Small rudimentary 3-lobed ovary present.

Esperanza Falls, 500 feet, *O. E. White,* February, 1922 (*no. 2014*). The same collected by M. Bang (*no. 2577*) and distributed and published as "*D. cymosula* Hemsley."

ZINGIBERACEAE

Renealmia spectabilis

Rachis, peduncles, etc., densely pilose with short, thick, tapering hairs. Leaf (but one seen) 6 dm. long, 8 cm. broad, lanceolate, doubly acuminate, very acute at the summit, thickish, the midrib very strong on both surfaces, the nerves innumerable and very fine. Scape not seen. Rachis stout, angled, rather densely flowered, the peduncles stout, 5 to 8 mm. long, mostly 1-flowered. Bract about 2.5 cm. long and broader. Flower short-stipitate. Ovary small, ellipsoid, densely sericeous-pilose. Calyx two-thirds as long as the bract, the base connate about the corolla-tube, the summit shortly and unequally 3-lobed. Corolla-tube half the length of the calyx, turned almost horizontally, the lobes about 2.5 cm. long, two lanceolate, the third ovate, all obtuse, subhyaline and finely nerved. Labellum about as long as the calyx, broadly obovate and obcordate, strongly complanate, keeled, the keel strongly channeled within and extended at the summit into a large, strongly incurved beak or hood. Lateral staminodia very small, uncinately recurved. Filament opposite the keel, rigid, erect, flattened and complanate, half the length of the petals. Anther large. Style very slender, nearly as long as the petals, the stigma 3-lobed.

Rurrenabaque, 1,000 feet, *Martin Cardenas,* January 24, 1922 (*no. 2039*). "Bracts white, petals yellow with red lines."

Species strongly characterized by its long filament and hooded labellum.

Renealmia Cardenasii

Scurfy-tomentellate, the stem slender. Sheath about 1 dm. long, the petiole slender, about half the length of the sheath. Leaf-blade about 4 dm. long, 8 cm. broad, lance-oblong or oblanceolate, abruptly and acutely short-pointed, thin, pale-green, sparsely and finely scurfy. Scape erect, in fruit reaching a meter in height, slender, leafless, invested by a series of about 5 loose sheaths a little shorter than their internodes, with broadly rounded or subtruncate darker summits. Flowering rachis about a fourth or a third of the total length of the scape, densely or loosely flowered. Bracts widely spreading, about 15 mm. long, broadly oval, subtruncate or obtuse, subhyaline, 5-nerved. Bractlet half the length of the bract, hyaline, truncate, cylindric, open nearly to the base on one side. Flowers immature. Fruit 3 cm. long and half as wide, ellipsoid, about 40-ribbed. Seeds 6 mm. long, including the short stipe, broadly obovoid, irregularly and bluntly angular, brown, lustrous, very finely verrucose.

Rurrenabaque, 1,000 feet, *M. Cardenas,* October 7, 1921 (*no. 844*).

Species near *R. breviscapa* Poepp. & Endl.

Costus rurrenabaqueanus

Sheaths, lower leaf-surfaces, etc., minutely soft-puberulent, the stem stout. Sheaths closely enclosing the stem, about 1 dm. long, the summit evenly and horizontally truncate, the blade attached by a narrow base about 4 or 5 mm. long and wide. Blade (only the uppermost seen), 3 dm. long, 7 cm. wide, oblanceolate, with regularly narrowed base and abruptly acuminate and acute summit, pale-green beneath, deep-green above. Spike short and broad, the thick, broad, many-nerved bracts obtuse. Calyx 3 cm. long, 7 mm. wide, cylindric, thick, rigid, 3-lobed, the lobes short, broad and obtuse. Labellum 7 cm. long and nearly as broad, deeply 3-lobed. Petals and labellum lemon-yellow. Petaloid filament purple-red, more than half the length of the labellum and half as wide as long.

Rurrenabaque, 1,000 feet, *Martin Cardenas,* November 28, 1921 (*no. 1882*).

Costus (?) sinningiaeflorus

Hirsute, the leaf-sheaths, bracts and midribs ferruginous underneath, the stems stoutish, densely leafy to the summit.

Leaves (only the upper ones seen) 2 to 3 dm. long, 6 to 10 cm. wide, regularly or somewhat inequilaterally obovate, the summit abruptly continued into a very acute, straight or oblique point about 2 cm. long. Blades thin and flaccid, ciliate, sparsely pilose on the upper surface, finely many-nerved, the slender nerves sharply prominent on both sides, falcate and connivent at the summit. Spike short and dense, closely sessile, the broad ferruginous bracts closely imbricate, some with slightly foliaceous mucronate summit. Flower 7 cm. long, the oblique mouth nearly 5 cm. broad, the campanulate, somewhat ventricose tube nearly as wide as the mouth, white, the limb brownish below, brilliant-purple above, the lobes nearly 2 cm. long, and broader, with rounded summit. Stamens 2, both with two-celled anthers, one reaching a little above the middle of the flower, the other a little higher and distant from the first, the anthers oblong, with rounded summits and cordate base and ciliate inner margins. The rounded summit of the anther appears to consist of an appendage. Pistil not seen. As we found but one specimen of this strange plant, and this has but one flower, I am unwilling to destroy the latter, which is very beautiful, by dissection. In habit and form of flower, the plant is a perfect *Costus,* but its stamen-characters mark it as a distinct genus, which I can scarcely describe from such scanty material.

Rurrenabaque, 1,000 feet, *M. Cardenas,* November 26, 1921 (*no. 1851*).

Marantaceae

Calathea bracteosa

(Eucalathea.) Glabrous, the stems tall, leafy. Petiole (but one leaf seen) nearly a meter long, stout, the base broadly dilated and complanate to serve as a sheath from which the peduncle emerges. Blade 7 dm. long, 3 dm. wide, oval, with rounded base and summit, thin. Peduncles 2 in the axil of the leaf, between them arising a stout rachis 8 cm. long, bearing at its summit an aphyllous sheath similar to the leaf-sheath, and giving origin to 3 peduncles similar to those below, but shorter, and a continuation of the rachis, (the remainder of which has been broken off). Peduncles flabellately arranged, slender, 1 to 2 dm. long, subtended by coriaceous bracts about half the length of the peduncles. Spikes compressed, 6 to 12 cm. long, about 3 cm. wide, composed of distichous, densely imbricated coriaceous bracts, about 1.5 cm. long and of greater breadth, with broadly rounded or subtruncate summit. Flowers light-purple, sessile in the

bracts, subtended by membranaceous keeled bractlets. Ovary oblong, a little wider at the truncate summit, densely setaceous-pilose at the base. Sepals about 1 cm. long, one a little wider, oblong with rounded summit, hyaline, finely very many-nerved. Corolla-tube nearly 3 cm. long, very slender, the rest of the flower 1 cm. long, the corolla-lobes subequal, hyaline, 13- or 15-nerved, broadly oval. Petaloid filaments about two-thirds the length of the petals, a short recurved vermiform appendage on one side. Lip a little longer than the latter, subrotund, entire, very thin. Exserted portion of style broadly margined, complanate, the summit involute, the terminal portion small. Capsule 1 cm. long, the three seeds 6 mm. long, light-brown, lightly and coarsely tuberculate.

San Buena Ventura, 1,000 feet, *M. Cardenas,* November 26, 1921 (*no. 1858*).

Calathea stenostachys

(Eucalathea.) Stems, petioles, etc., pubescent, the leaves minutely scurfy, the floral bracts glabrous. Stems short, leafy, a number of aphyllous sheaths at the base. Petiolar sheaths 1 to 1.5 dm. long, the petioles only 3 to 5 mm. long. Blades 1 to 2 dm. long, 4 to 6 cm. broad, lanceolate, with rounded base and acute summit, very thin, pale-green. Spikes simple or with one branch, the peduncles elongate and very slender, the rachis 2 to 3 dm. long, the spikes compressed, about 1 cm. broad, the bracts distichous, complanate, 1 cm. long, oblanceolate, obtuse, light-brown. Ultimate peduncles 2-flowered, filiform, 7 mm. long, a little longer than the calyx. Flowers sessile, the ovary short, white-tomentose. Sepals rigid, lanceolate, long-acuminate and acute. Corolla-tube about 1 cm. long, very slender, the rest of the flower 7 mm. long. Lip about equaling the petals, spatulate, narrow. Style much shorter than the petals, the summit strongly involute. Fruit not seen.

Bala, 1,000 feet, *H. H. Rusby,* November 28, 1921 (*no. 1866*).

Calathea Whitei

(Microcephalum.) Stemless; lower leaf-surfaces minutely scurfy, the flower sparsely pilose. Petioles half the length of the blades, or less, broad but closely involute; costate, with finer intervening nerves. Blades 1.5 to 2 dm. long, obovate, obtusish, involute in drying, very thin, bright-green above, very pale beneath. Heads closely sessile upon the rhizome, crowded, the

bracts about 2.5 cm. long, ovate, acuminate, obtusish or acutish, finely many-nerved. Flower yellow. Calyx nearly 1 cm. long, 1.5 to 2 mm. wide, one sepal slightly broader than the others, lance-linear, acuminate, about 15-nerved, hyaline. Corolla-tube 2 cm. long, very slender, the lobes 1 cm. long, the posterior 3 or 4 mm. broad, nearly twice as wide as the lateral. Petaloid stamen-lobes unequal, the shorter about two-thirds the length of the labellum, which is much shorter than the petals, and spatulate, its broad, rounded summit crispate or denticulate, strongly incurved over the flower. Top of style much thickened, involute. Capsule broadly obovoid, lightly 3-lobed, bearing the persistent sepals, which enclose the base of the stamen-tube and the broadly conic style-base. Seeds 3, nearly as broad as long, truncate, coarsely tuberculate.

Cachuela Esperanza, 500 feet, *O. E. White,* February, 1922 (*no. 1904*).

Calathea Cardenasii

Glabrous, the stem leafy, but one leaf seen. Sheath of petiole about 2 dm. long, closely sheathing, the petiole proper 1.5 cm. long, stout. Blade 1.5 dm. long, suborbicular or broader than long. Culm above the leaf bearing one or more aphyllous sheaths at the base of peduncles which develop later than the terminal one, these sheaths more than 1 dm. long, herbaceous, acute. Peduncles about 2 dm. long, slender, about as long as the spike, which is compressed. Scales imbricate, 2 cm. long, the summit rounded, coriaceous. Ovary 3 or 4 mm. long, cylindric, the upper half narrower, truncate with a setaceous ring at the base of the calyx, which is 4 mm. long, the lobes equal, hyaline, obtusish. Corolla-tube about 12 mm. long, the rest of the flower 5 mm. long. Petals oval, one considerably broader than the others, a little longer than the obovate petaloid stamens, the lateral appendage minute. Lip nearly equaling the petals, very broad, of deeper color. Style very strongly involute; if extended, nearly equaling the lip and longer than the stamen.

In water, on the pampas near Lake Rogagua, 1,000 feet, *M. Cardenas,* November 3, 1921 (*no. 1413*).

Piperaceae

Piper benianum Trelease

A shrub (?), scarcely nodose, glabrous, flowering internodes slender and elongated; leaves broadly elliptic or ovate-elliptic,

rather abruptly blunt-acuminate, acute at base, rather small (4.5–5.5 × 8–9 cm.), pinnately nerved from about the middle, the nerves 4 or 5 × 2, chartaceous, somewhat glossy and very obscurely granular beneath; petiole 5–15 mm. long, the longer winged; spikes opposite the leaves, as yet young and small (2 × 15 mm.), blunt; peduncle 10 mm. long; bracts small, round-subpeltate, with very narrow concolorous margin; flowers sessile, perfect.

Huachi, head of Beni River, at 3,000 feet, *M. Cardenas,* 1921 (*no. 466*).

Piper bopianum Trelease

A shrub (?), somewhat nodose, flowering internodes slender, moderately elongated, at first subhirsute but glabrescent except near the nodes; leaves obliquely elliptic-lanceolate or oblanceolate, sharp-acuminate, narrowed to the (sometimes cordulate) base, moderate (5 × 15–6 × 14 cm.), pinnately nerved from below about the upper third, the nerves about 6 × 2, drying thin and dull green, dark-punctulate beneath with the nerves hirsute; petiole scarcely 5 mm. long, hirsute, winged; spikes opposite the leaves, thick and short (5 × 10 mm. when flowering), mucronate; peduncle very short (2 mm.), hirsute; bracts round or triangular-subpeltate, with very conspicuous hairy pale border; flowers sessile, perfect; stigmas 3, minute, terminating a slender style as long as the ovary.

Bopi River Valley, at 3,000 feet, *H. H. Rusby,* 1921 (*no. 669*).

Piper Cardenasii Trelease

A shrub, nodose, flowering internodes rather slender but short, villous-hirsute when young; leaves oblong, gradually pointed, cordulate or cordate, moderate (4–5 × 15–16 cm.), pinnately nerved from below the middle, the nerves 6 or 7 × 2, bullulate in age, microscopically scabrous above, appressed-hairy on the nerves beneath; petiole very short (3 mm.), hairy, scarcely winged; spikes opposite the leaves, much curved, as yet young and some 2 × 30–50 mm., rather long-mucronate; peduncle 10 mm. long, crisp-hairy; bracts roundish-subpeltate with narrow margin; flowers sessile, perfect.

Pampas near Lake Rogagua, at 1,000 feet altitude, *M. Cardenas,* 1921 (*no. 1663*), type; also same place, *H. H. Rusby* (*no. 1685*).

Piper cataractarum Trelease

A shrub (?), scarcely nodose, flowering internodes rather slender and elongated, at first softly subvillous; leaves subelliptic, caudate, nearly equilaterally acute at base, moderately large (6.5 × 14–7 × 18 cm.), pinnately nerved from about the middle, the nerves about 6 × 2, drying thin and dark, white-scabrid, the nerves upcurved-hirsute beneath; petiole 15 mm. long, velvety, winged at base; spikes opposite the leaves, as yet young and small (2 × 50–60 mm.), mucronate; peduncle 10 mm. long, somewhat velvety; bracts round-peltate, small with narrow margin; flowers sessile, perfect.

Cataracts of the Bopi River, at 3,000 feet, *H. H. Rusby,* 1921 (*no. 672*).

Piper elliptico-oblongifolium Trelease

A shrub (?), nodose, flowering internodes rather thick and short, loosely hirtellous; leaves obliquely oblong-elliptic, rather abruptly subacuminate, obliquely acute at base, moderate (5 × 12–14 cm.), pinnately nerved from below about the upper third, the looping nerves 5 or 6 × 2 with some fainter intermediates; chartaceous, slightly glossy, granular and with the nerves hirtellous beneath; petiole 15 mm. long, velvety, scarcely winged; spikes opposite the leaves, as yet young and small (2 × 30–40 mm.), mucronate; peduncle scarcely 10 mm. long, hirtellous; bracts rounded-subpeltate, with narrow dingy margin; flowers sessile, perfect.

Bopi River Valley, at 3,000 feet, *H. H. Rusby,* 1921 (*no. 671*). Very like *P. rurrenbaqueanum* except that it is pubescent.

Piper nigro-granulatum Trelease

A shrub (?), scarcely nodose, glabrous, dark-granular throughout; flowering internodes slender but short; leaves lanceolate, acute at both ends or subacuminate, small (8 × 10 cm.), pinnately nerved from below the upper third, the nerves about 5 × 2, drying dull-green and thin, somewhat paler beneath; petiole short (5 mm.), scarcely winged; spikes opposite the leaves, as yet young and small (2 × 20 mm.), scarcely mucronate; peduncle very short (3 mm.); bracts round-subpeltate, comparatively large, conspicuously pale-margined; flowers sessile, perfect.

Bopi River Valley, at 3,000 feet, *H. H. Rusby,* 1921 (*no. 573*).

Piper rectispicum Trelease

A shrub (?), nodose, glabrous, flowering internodes slender and rather short; leaves elliptic, acuminate, acute and sometimes oblique at base, moderate (6 × 15 cm.), pinnately nerved from below the middle, the nerves about 4 × 2, drying rather thin-papery and somewhat glossy beneath; petiole 5 mm. long, scarcely winged; spikes opposite the leaves, straight, 3 × 110 mm., mucronate; peduncle 5–10 mm. long; bracts round- or triangular-subpeltate with narrow pale ciliate border; flowers sessile, perfect; berries subcubic; stigmas 3, minute, sessile.

Bopi River Valley, at 3,000 feet, *H. H. Rusby,* 1921 (*no. 574*).

Piper rogaguanum Trelease

A shrub (?), scarcely nodose, glabrous, flowering internodes slender and elongated; leaves elliptic, gradually acute or subacuminate; cordulate, moderate (6 × 12 cm.), pinnately nerved from below about the middle, the nerves 5 or 6 × 2, drying dull green, somewhat obscurely granular beneath; petiole about 15 mm. long, winged near the base; inflorescence unknown.

Pampas near Lake Rogagua, *H. H. Rusby,* 1921 (*no. 1689*).

Piper rurrenbaqueanum Trelease

A shrub (?), nodose, glabrous, flowering internodes rather thick and short; granular-punctulate; leaves oblong-elliptic, abruptly short-acuminate, obliquely acute at base, moderate (5 × 14 cm.), pinnately nerved from below the upper third, the looping nerves 4–6 × 2 with some intermediates, chartaceous, slightly glossy above, dark-granular beneath; petiole 10–15 mm. long, scarcely winged; spikes opposite the leaves, as yet young and small (2 × 20 mm.), mucronate; peduncle as yet only 5 mm. long; bracts rhombic-subpeltate, the large umbo with very narrow paler margin; flowers sessile, perfect.

Rurrenbaque, at 1,000 feet, *H. H. Rusby,* 1921 (*no. 836*).

Piper svidaefolium Trelease

A shrub (?), scarcely nodose, flowering internodes slender and elongated, green, at first almost canescently crisp-velvety; leaves elliptic- or round-ovate, blunt-subacuminate, rounded at base, 5–6 × 10–12 cm., pinnately nerved from the lower third or half, the nerves about 4 × 2, minutely subscabrid above, the ap-

pressed-pubescent nerves pale beneath; petiole 5 mm. long, scarcely winged, crisp-pubescent; spikes opposite the leaves, as yet young and small (2 × 30 mm.), submucronate; peduncle scarcely 5 mm. long, velvety or crisp-pubescent; bracts lunulate-subpeltate with ample pale margin; flowers sessile, perfect.

Pampas near Lake Rogagua, at 1,000 feet, *H. H. Rusby,* 1921 (*no. 1687*).

Peperomia efimbriata Trelease

A fleshy repent-ascending herb; stem slender (1 mm.), drying quadrangular, sparsely hairy below, glabrous above; leaves commonly 3 or 4 at a node, ovate-elliptic or the lowermost orbicular, rounded at both ends or emarginulate, small (5 × 5–7 × 9 mm.), opaque, glossy, at most very obscurely 3-nerved, impressed-punctulate, glabrous or the lower sparsely hairy beneath; petiole 1 mm. long, glabrous; spikes terminal, small (1 × 20 mm.), rather loosely flowered below; peduncle scarcely 10 mm. long, clavate, glabrous; bracts round-peltate.

Pongo de Quime, at 11,500 feet, *O. E. White* (*no. 164*). Type specimen in Trelease herbarium.

Peperomia rurrenabaqueana Trelease

A moderate-sized somewhat forking zig-zag herb, glabrous except for the lower leaf-surface; leaves alternate, lance-elliptic, obliquely narrow-acuminate, rounded at base, moderately large (2.5–3 × 5.5–8 cm.), drying dull and yellowish beneath, obscurely pinnately nerved from below the middle, the branches of the midrib 3 × 2, glabrous above, conspicuously but sparsely long-hairy beneath; petiole rather short (scarcely 10 mm.); spikes terminal and axillary, long and slender (2 × 150 mm.), closely flowered; peduncle short (10 mm.); bracts round-peltate; berries oblong, subtruncately scutulate; stigma oblique.

Rurrenabaque, at 1,000 feet, *H. H. Rusby* (*no. 794*). Type specimen in Trelease herbarium.

Peperomia rhombifolia Trelease

A moderately small glabrous herb; stem rather slender (2–3 mm.), 4-angled near the nodes; leaves alternate or opposite, lanceolate to broadly rhombic, sharply rather long-acuminate, subacute at base, moderate (1.5–3 × 5–6 cm.), 5- or 7-nerved; petiole about 5 mm. long, subdecurrent; spikes terminal and

axillary, moderately slender and elongated (scarcely 2 × 50 mm.), rather closely flowered, the flowers separated by anastomosing ridges; peduncle filiform, 10–15 mm. long; bracts round-peltate; ovary ovoid, apiculate; stigma terminal.

Bopi River Valley, at 3,000 feet, *H. H. Rusby* (*no. 581*). Type specimen in Trelease herbarium.

Peperomia Cardenasii Trelease

A moderately small succulent spreading herb, drying grayish-green: stem moderate (2–3), drying very angular, somewhat glossy, at first closely velvety, the hairs later fewer or disappearing; leaves commonly 3 at a node, subrhombic-elliptic, obtuse at both ends or the large end cuneate, rather small (1.5 × 2.5–2 × 5 cm.), rather papery, scarcely sulcately 3- or 5-nerved, dark-granular and for a time loosely velvety beneath; petiole 2–5 mm. long, deeply channeled, at first velvety; inflorescence unknown.

Rurrenabaque, at 1,000 feet, *M. Cardenas* (*no. 1174*). Type specimen in Trelease herbarium.

Peperomia bopiana Trelease

A rather small stoloniferous glabrous herb with ascending branches: leaves commonly 3 or 4 at a node, rhombic-lanceolate, almost truncately obtuse, subacute at base, small (5–8 × 15–25 mm.), more or less revolute, opaque, rather obscurely 3-nerved; petiole very short (1 mm.); spikes terminal, small (about 1 × 30 mm.), closely flowered; peduncle at length 2 cm. long; bracts round-peltate.

Bopi River, at 3,000 feet, *H. H. Rusby* (*nos. 387* and *570*). Type specimen in Trelease herbarium.

Peperomia galiifolia Trelease

A rather small creeping succulent herb with short erect leafy branches: stem velvety when young but glabrescent; leaves 3–6 at a node, spatulate-oblong or subelliptic, obtuse, or obscurely submarginulate, sessile, minute (3–4 × 7–15 mm.), minutely soft-pubescent above, obscurely pinnately veined by transmitted light; spikes terminal, small (scarcely 1 × 20 mm.), closely flowered; peduncle 7 mm. long, velvety; bracts round-peltate.

Pongo de Quime at 11,500 feet, *O. E. White* (*no. 166*). Type specimens in Trelease herbarium.

Peperomia punctulatissima Trelease

A glabrous black-punctulate assurgent herb; leaves alternate, lance-elliptic to broadly elliptic, equally subobtuse at both ends or the narrow end bluntly subacuminate, moderate (2–2.5 × 4–6 cm.), multiple-nerved, the branches of the midrib 3 × 2 from near the base; petiole 5–10 mm. long; spikes terminal and axillary, filiform (1 × 70 mm.), loosely subverticillately flowered; peduncle very short (5 mm.); bracts round-peltate, black; ovary ovoid; stigma obliquely anterior.

Cataracts of the Bopi River, at 3,000 feet, *H. H. Rusby* (*no. 592*). Type specimen in Trelease herbarium.

Peperomia canaminana Trelease

A moderately small succulent glabrous spreading herb, drying gray-green: stem moderate (2–4 mm.), drying very angular, glossy; leaves 3 or commonly 4 at a node, rhombic-elliptic or obovate, acute or obscurely blunt-acuminate or very obtuse, cuneate, rather small (1.2–1.5 × 2.5–3.5, or 2 × 4–5.5 cm.), coriaceous, sulcately 3- or 5-nerved, more or less revolute, impressed-punctulate above; petiole very short (1–2 mm.), deeply channeled; inflorescence unknown.

Canamina, at 4,000 feet, *O. E. White* (*nos. 282, 513* and *515*). Type specimen in Trelease herbarium.

ARTOCARPACEAE

Pseudolmedia hirtellaefolia

Hirsute with coarse white and glistening or ferruginous spreading or somewhat appressed hairs, some of them glandular. Branchlets mostly slender, erect or ascending, reddish gray, coarsely angled, papillose with the bases of fallen hairs. Stipules about 1 cm. long, mostly equilateral or nearly so, ovate, acute, concave, thickish, densely hirsute. Petioles about 5 mm. long, stout. Blades to 2 dm. by 8 cm., ovate with rounded or blunt and inaequilateral base, the summit very abruptly contracted into an obtuse acumination; entire, thickish and rigid, above glabrous and slightly shining, the midrib and secondaries lightly channeled, the venation very finely and strongly reticulate, beneath more or less pilose, all the venation sharply prominent, the secondaries about 14 to 16 on each side, somewhat decurrent on the midrib, widely spreading, falcate,

and the ends sharply upcurved to meet in a strong, sinuate intramarginal line. Pistillate flowers (staminate not seen) subsessile, densely hirsute, subtended by about 10 closely imbricate scales which are about 1 mm. broad, thick and rigid, with rounded summit. Ovary broadly ovoid with rounded summit, densely pilose.

In the Bala Mountains near Rurrenabaque, 1,000 feet, *O. E. White,* October 17, 1921 (*no. 1495*).

"A small tree, 20 to 30 feet high, on rocky hillsides in deep forest in sandy loam. Fruit bright-red, as large as a cherry, sweet and slightly acid, very pleasant and very prolific. Seed black. Much eaten by Indians and better than 1492."

This is one of the fruits locally known as "Nui."

Pseudolmedia alnifolia

More or less pilose throughout, the trichomes various. Branchlets stout, short, terete, flexuous, annulate at the nodes, irregularly clothed with short coarse gray hairs, many of them with glandular heads. Stipules deciduous, about 1 cm. long, 3 or 4 mm. wide, lanceolate, acuminate, inaequilateral, thick, with prominent midrib and marginal nerve, puberulent and ciliate. Petioles none, or very short and stout. Blades to 6 by 12 cm., often relatively broader, varying from ovate to obovate, with rounded or subcordate base and broad summit abruptly contracted into a short, mostly obtuse point, entire, thick and rigid, strongly veined, the upper surface pale-green, somewhat shining, the midrib lightly channeled, the lower surface more or less ferruginous, densely minutely papillose, the midrib more or less hirsute, reddish, like the secondaries, which are 16 to 18 on a side, widely spreading, at first straight, then sharply upcurved and connecting near the margin, connected by numerous slender, sharply prominent tertiaries. Fruit broadly ovoid, 1 to 1.5 cm. broad, tomentose or hirsute, deep-purple, the pulp abundant, agreeable.

In the Bala Mountains, near Rurrenabaque, 1,000 feet, *O. E. White,* October 17, 1921 (*no. 1492*).

"A small tree, spreading 20 to 30 feet, common in deep forest. Indians eat this and other kinds, the fruit yellow-red, sweet and slightly acid, the seed yellow."

Ficus Whitei

(Urostigma.) Glabrous. Branchlets stout, deep reddish-brown, roughly wrinkled. Petioles about 4 cm. long, stout, fleshy and roughly wrinkled in drying, reddish or orange, like the midrib, channeled on the upper surface. Blades nearly 2 dm. long, and 6 cm. broad, oblong with rounded base and slightly mucronate obtusish summit, light yellowish-green, the upper surface minutely papillose. Midrib prominent on both surfaces, finely wrinkled, the secondaries 25 or more on each side, with intermediate finer ones, slender, diverging almost at a right angle and abruptly upcurved near the margin, the finer venation strongly anastomosing. Fruit globose, 2 cm. in diameter, shortly and stoutly peduncled, the peduncle bearing a circle of about 4 subconnate reflexed bracts, forming an involucre about 8 mm. broad, above which the fruit is shortly stipitate. Surface of fruit sparsely and rather obscurely muricate. Terminal opening small, surrounded by 5 small incurved yellowish bracts.

Pistillate Flowers.—Perigone 5- or 6-parted, the segments linear, somewhat wider in the middle portion, exceeding the pistil. Akene brown, shining, obovoid with rounded summit, the style lateral, from above the middle, about the length of the akene, the stigma acute.

Staminate Flower.—Perigone-segments 3, one somewhat broader than the others. Anther broadly oval, not quite reaching the summit of the perigone.

On river playas near Covendo, 2,000 feet, *O. E. White,* August 7, 1891 (*no. 1054*). "A large tree."

Ficus bopiana

(Urostigma.) Glabrous. Branchlets reddish-brown, much-wrinkled and roughened. Stipules nearly 1 cm. long, ovate-acuminate and acute. Petioles to 4 cm. long, red and roughened like the branchlets, deeply channeled above. Blades to 7 cm. long, and 8 cm. broad, oblanceolate, with acutish base and abruptly short-pointed and acute summit, entire, pale-green, thickish, the midrib very stout, prominent beneath, nerved, the slender secondaries about 15 on a side, diverging at a right angle, the outer ends strongly upcurved and looped together near the margin, the venation strongly and prominently anastomosing. Fruits axillary, apparently solitary, shortly peduncled, the subtending bracts not seen, globose, about 1 cm. in diameter, the

mouth small, light-brown, its margin not elevated, open. Pistillate flower slenderly stipitate, the perigone 6-parted, the segments linear, as long as the inaequilaterally obovoid ovary, its short and slender style arising on the side near the summit. Bractlets subulate, attenuate. Perianth of the staminate flowers 3-parted.

In the Bopi River Valley, 3,000 feet, *H. H. Rusby,* August 11, 1921 (*no. 591*). The same collected by M. Bang, between Tipuani and Guanai, December 1892 (*no. 1665*), and distributed as "*F. Radula* Willd."

Dr. Gleason, who kindly compared the specimen at Kew, thinks it may be the same as Spruce's 2345, collected at San Gabriel.

Pourouma uvifera

(Only fruiting specimens seen). Glabrous, except as to the leaves and inflorescence, the branchlets short and very stout, sharply annulate and heavily wrinkled in drying, the leaves becoming much larger than those here described. Petiole 2 dm. long, terete, sharply several-sulcate. Leaves digitate, 9- to 11-foliolate, the leaflets distinct or shortly confluent at the base, 1 to 2 dm. long, 2.5 to 4 cm. wide, oblanceolate, abruptly acuminate and acute at the summit, obscurely sinuate at the margin, above very shortly puberulent and slightly rough, and drying brownish, beneath white and closely and softly tomentellate, the secondaries 20 to 25 on each side, slender, shortly decurrent at the base, running straight to the margin at about 45 degrees, lightly and sharply prominent on both sides, more so beneath, connected by innumerable fine tertiaries. Fruiting inflorescence only about half as long as the petioles, the peduncles and branches stout, the former slightly thickened upward and recurved, the young fruits velutinous, very shortly and very stoutly pedicelled and slightly umbilicate at the base, ovoid, tipped by a short and very broad style and a broad depressed-capitate or discoid stigma. Mature fruit glabrous, yellowish-green, about 2 cm. long, sweet and mucilaginous, the pulp clinging tightly to the seed.

Rurrenabaque, 1,000 feet, *H. H. Rusby,* October 1921 (*no. 1599*).

A large tree near the river, the edible fruit known as "Uva del monte" (wild grape) and "Tanaribe." It is said that eating it to excess induces an obstinate and dangerous constipation.

Pourouma subtriloba

(Only fruiting specimen seen.) Shortly soft-tomentose, except the scabrous upper leaf-surfaces, the branchlets dark-ferruginous, striate, very slenderly obliquely annulate at the top of the leaf-scar, which is about as broad as long. Petioles stout, striate, ferruginous, less than half the length of the blades, which in my specimens are from 10 to 20 cm. long, 7 to 15 cm. broad, ovate, the largest somewhat 3-lobed, lightly cordate at the base, acute or acutish, entire or very obscurely sinuate-crenate, thick, deep-green and scabrous above, white and soft-tomentose beneath, the secondaries slender, straightish, at an angle of about 45 degrees, connecting very near the margin with the tertiaries, by several loops, connected by innumerable tertiaries, between which the veins strongly anastomose. Fruiting cyme (but one seen) small and few-fruited, stoutly peduncled, the fruits shortly and stoutly pedicelled, subtended by a rotate, entire, thick calyx-base 6 mm. broad, subglobular, nearly 2 cm. long and broad.

Near Tumapasa, 1,500 feet, *M. Cardenas,* December 10, 1921 (*no. 1990*). "A large forest tree with edible fruit." Very near Hayes, Panama, *no. 860,* which appears to be undescribed.

Urticaceae

Urera viridisetosa

Stem densely clothed with spreading or slightly retrorse prickles which are 3 to 5 mm. long, linear, green, terminating in a white seta, and with the upper part of their margins minutely white-setose. Stipules connate, 10 to 15 mm. long, ovate, with attenuate summit. Prickles of the petioles and veins of the lower leaf-surfaces reflexed, on successively shorter green bases. Petioles about a third of the length of the blades, which are 1 to 2 dm. long, 5 to 10 cm. broad, ovate, acute, slightly cordate, coarsely dentate, both teeth and sinuses short, triangular, acutish; thin, the upper surface deep-green and irregularly papillose, the lower surface pale or grayish-green, tomentose, finely reticulate. Cymes scattered along the sides of the stem, one or two cm. long. Pistillate flowers prickly, the stigma densely pilose. Fruit 2 mm. long, subglobose. Staminate flowers not seen.

Huachi, 1,800 feet, *O. E. White,* September 4, 1921 (*no. 1010*). "A shrub, 6 to 8 feet high. Prickles worse than those of Jatropha."

A species collected by Dr. Rose near Huigram, Ecuador, is very similar, but is distinct and undescribed.

Myriocarpa purpurascens

(Only the staminate plant seen.) Entire plant lightly scabrous, especially the lower leaf-surfaces. Branches stout, reddish, striate-wrinkled. Petioles 3 to 12 cm. long, slender, grooved above, the blades 1 to 2 dm. long, 5 to 15 cm. broad, ovate, abruptly very short-acuminate and acute, with broad oblique base, finely sinuately serrate, the teeth obtuse or minutely mucronulate, thin but of firm texture, bright-purple, especially when young, coarsely and shallowly pitted on the upper surface, the venation lightly prominent beneath, the slender secondaries 8 or 10 on a side, at first widely spreading, then strongly falcate, connected by very slender tertiaries, these connected by a coarse reticulation. Stipules nearly 1 cm. long, purple. Spikes branching at the base, very numerous, exceeding the leaves, filiform, densely flowered, the flowers purple. Calyx 2 mm. broad, 4-parted, the divisions slightly unequal, the anthers mostly 4, occasionally 5 (the fifth perfect?).

Along the Bopi River, 3,000 feet, *H. H. Rusby,* September 11, 1921 (*no. 659*). A small tree with purple flowers, in the edge of the forest.

Loranthaceae

Phrygilanthus cordifolius

Glabrous, the stems stout, terete, gray, sparsely and minutely black-punctate, the internodes much shorter than the leaves. Leaves sessile, clasping, 5 to 8 cm. long, 3 to 5 cm. wide, obtuse, shallowly cordate, entire, thick, pale-green, the venation lightly prominent, strongly so beneath, 10- to 12-nerved from the base, with abundant, very slender reticulation. Flowers orange-red, densely aggregated at the ends of the stems. Calyx 3 or 4 mm. long, the corolla 3 cm. long, curved before expanding, very slender, the dried petals filiform.

Trinidad, *M. Cardenas,* March, 1922 (*no. 10, special*).

Phrygilanthus falcatus

Glabrous, the stems stout, terete, gray, swollen at the nodes. Leaves opposite, subsessile, 5 to 7.5 cm. long, 2 to 4 cm. broad,

lance-ovate, mostly inequilateral, many strongly so and strongly falcately curved, obtuse, entire, moderately thick, about 7-nerved, the nerves extending into the very short petiole, slender, sharply prominent, regular, sparingly branched, the branches mostly erect or strongly ascending. Branches of the raceme opposite, mostly one- or two-flowered, the flowers on very short stout pedicels. Calyx cupulate, 6 to 7 mm. long and about half as broad, thick, finely many-nerved or wrinkled, obscurely and irregularly toothed. Petals 4 or 5 cm. long, needle-shaped or very narrowly linear, exceeding the filiform filaments. Anthers linear, 2 mm. long. Style equaling the petals.

On the River Ibon (eastern Bolivia), about 200 feet altitude, *O. E. White,* February 11, 1922 (*no. 2363*).

"Flowers scarlet-crimson and yellow, the anthers purple."

Var. (?) macrocalyx

This form varies from the type in having flowers about a third longer, of a bright yellow color, and with the calyx twice as long. The leaves are more strongly falcate.

On the Rio Ibon, Beni, 200 feet, *O. E. White,* February 11, 1922 (*no. 2399*).

Phoradendron Rusbyanum Trelease

(Quadrangulares.) Pseudodichotomous, the rather long internodes with basal cataphyls only, androgynous. Internodes moderate (2 × 30–40 mm.), smooth, somewhat 4-angled and golden-glistening. Cataphyls a single pair toward the base, blunt and suberect. Leaves subspatulately oblong or obovate, very obtuse, 1 × 3–4 cm., cuneately subsessile. Spikes mostly clustered, short (about 10 mm.), with 2 or 3 slender joints, 6- to 12-flowered in 4 or 4 + 2 series; peduncle 1–3 mm. long. Fruits round-ellipsoid, smooth, 1–1.5 × 2 mm.; sepals closely inflexed.

Reyes, at 1,000 feet, *H. H. Rusby,* (*no. 1714*). Type specimen in Trelease herbarium.

Olacaceae

Heisteria ixiamensis

(Fruiting specimen.) Glabrous. Branchlets elongate, slender, terete, leafy. Petioles to 2 cm. long, dark-brown, narrowly grooved above. Blades to 18 cm. long, by 8 cm. broad, oblong to

oval, with obtuse or acutish base and acute summit, relatively thin, all venation slender, lightly prominent beneath, the secondaries, about 10 on each side, widely spreading, then strongly ascending and connecting at some distance from the margin, connected with one another and with the midrib by numerous straightish and very slender tertiaries. Fruits borne on nodules of the leafy branchlets. Pedicels slender, regularly thickened upward, 1 to 2 cm. long. Calyx 2 to 2.5 cm. broad, strongly veined, the margin obscurely sinuate. Drupe 1 cm. long, 7 mm. broad, oval and nearly elliptic.

Ixiamas, 1,500 feet, *Martin Cardenas,* December 13, 1921 (*no. 1906*).

Species near *H. cauliflora* Smith, but well distinguished by its pedicellate fruits.

Polygonaceae

Coccolobis padifolia

Glabrous. Branchlets numerous, short and stout, very flexuous, coarsely angled. Sheaths short and broad. Bracts coriaceous, triangular-ovate, broader than long, short-acuminate and acute, erect. Petioles to 1 cm. long, stout, sulcate. Blades to 12 by 4 cm., regularly lanceolate with rounded base and obtuse or acutish summit, entire, thick and coriaceous, the slender venation prominent on both sides, finely and very strongly anastomosing, the secondaries about 8 or 10 on each side, ascending at a little more than 45 degrees, strongly falcate. Racemes terminating short branchlets, the base sheathed with imbricate scales, shortly peduncled and mostly subtended by a miniature leaf; mostly 2 to 3 cm. long, slender, loosely flowered. Pedicels filiform, about 3 mm. long. Sepals 5, imbricate, petaloid, 2 mm. long. Corolla wanting. Stamens equal, the filaments dilated toward the base and slightly connate, the anthers rounded. Styles 3, the stigmas flattened, their margins crenate-lobed. Ovary ovoid, short, the base enclosed in the short stamen-tube.

Rurrenabaque, 1,000 feet, *H. H. Rusby,* October 7, 1921 (*no. 848*).

Triplaris Williamsii

Branchlets stout, flexuous, dark-brown. Ochreae caducous, not seen. Petioles 2 to 2.5 cm. long, very stout, strongly grooved by the very acute, rigid, involute margins. Blades 2 to 5 dm.

long, 6 to 18 cm. broad, oblong, with rounded base and short-acuminate summit, entire, glabrous, thin in consideration of their great size, deep-green on both sides, the midrib narrowly channeled above, very strongly prominent beneath, the 25 to 30 pairs of secondaries slender, sharply prominent beneath, widely spreading, somewhat crooked, slightly falcate, connecting near the margin, connected by a loose, slender reticulation. Panicles much branched, the branches long, stout, densely gray or yellowish tomentose, like the bracts, the flowers gray-pilose. Bracts 2 mm. high and broad, concave or cup-shaped, the concavity facing outward. Sepals about 1.5 cm. long, 2 mm. broad, oblanceolate, obtuse, with a broad base below a contracted portion, the base long-white-pilose. Petals about as long as the base of the sepals, lanceolate, acuminate and acute, glabrous. Ovary two-thirds as long as the petals, the slender distinct purple styles extending slightly beyond the petals. Staminate flowers not seen. Fruiting calyx-tube nearly 1 cm. long and about half as broad, oval, pilose, the sepals nearly 2 cm. long, 6 mm. wide, oblanceolate with rounded summit. Ovary brown, somewhat shining, finely many-nerved, with obtusish angles, a little shorter than the persistent petals, which lie closely appressed in its grooves.

Fruiting specimen: San Buena Ventura, *R. S. Williams,* 1,000 feet, November 14, 1901 (*Williams, 672,* distributed as *T. boliviana* Britton). Flowering specimen: Huachi, 1,800 feet, midway between Meguilla and San Buena Ventura, *O. E. White,* August 14, 1921 (*no. 958*).

Clearly distinct from *T. boliviana,* especially in the form and venation of the leaves.

Triplaris vestita

Densely tomentellate throughout and more or less ferruginous, the branchlets stout, terete, subcostate, the leaves more or less reflexed. Petioles 1 cm. or more long, very broad, involute, the base slightly clasping. Blades 8 to 15 cm. long, 5 to 8 cm. broad, ovate with rounded and slightly unequal base and mostly obtuse summit, entire, light or yellowish-green, thick, the rather stout venation prominent on both sides, the secondaries about 15 to 18 on a side, spreading, sharply up-curved near the margin and connected by many crooked tertiaries. Panicle terminal, the branches short and stout, densely fruited, the entire fruiting inflorescence light-green, except the ferruginous rachis and bracts,

the latter deep-brown, enclosing and longer than the pedicels. Fruiting calyx 3 or 4 cm. long, the tube nearly a third of the length and about as broad as long, the limb narrowly oblanceolate with rounded summit, the narrowly linear, acuminate petals reaching the base of the limb and exceeding the short, slender, distinct styles. Nut nearly as broad as long, strongly and sharply winged.

Meguilla, 3,000 feet, *H. H. Rusby,* July, 1921 (*no. 2175*).

Species totally unlike any other in its leaf-form and indumentum.

Triplaris setosa

Profusely setose-hairy, the hairs ferruginous, divergent or even slightly retrorse. Branches slender, terete, densely leafy. Ochreae not seen. Petioles very short and stout. Blades 2 to 3 dm. long, 6 to 10 cm. wide, lanceolate, with cordate subclasping base and acuminate and acute summit, entire, ciliate, thickish, the venation slender, sharply prominent on both sides, the secondaries 30 or more on each side, falcate, ascending, and very lightly connecting near the margin, connected by numerous slender crooked tertiaries. Panicle (but one seen) terminal, small, densely fruited. Fruiting calyx-tube 1.5 cm. long and 1 cm. broad, the entire calyx 5 cm. long, 7 mm. wide, somewhat unequal, narrowly oblanceolate, the basal portion a half broader than the limb. Petals little exceeding the basal portion of the sepals, but exceeding the styles, which are a third as long as the nut and coherent for nearly half their length.

Near Covendo, 2,000 feet, *O. E. White,* August 20, 1921 (*no. 910*).

This species is closely related to *T. hispida* Britton, which has appressed bristles on the midrib and is of very different leaf-form and habit.

Ruprechtia scandens

Stems woody, thick, twining high and widely, fistulous, the branchlets terete, striate, puberulent. Ochreae 3 or 4 mm. long, with oblique truncate summit, appressed-pilose. Petioles about 8 mm. long, stout, mostly twisted, the margins involute. Blades 1 to 2 dm. long, 3 to 5 cm. broad, oblong, with obtuse base and abruptly very short-pointed obtusish summit, rigid, entire, puberulent above, becoming glabrous, with the midrib and 12 to 15 pairs of secondaries impressed, somewhat harsh beneath, the

trichomes more persistent, the midrib and secondaries very strong and prominent, connected by a very fine and exceedingly strong reticulation.

Staminate panicles very slenderly branched, gray-puberulent, the branches rather loosely flowered. Flowers 3 together in a campanulate involucre with very shortly and unequally toothed oblique margin and subtended by an ovate acuminate bract. Flowers slenderly pedicelled, the pedicels pilose, about as long as the involucre. Petals and sepals about equal, about 1 mm. long, oval, obtuse. Stamens half the length of the petals.

Pistillate panicles sparingly branched, the branches distant, slender, gray-pubescent, densely flowered, the lower often subtended by reduced leaves, the flowers green, sessile. Outer bract ovate, the inner connate to form a sheath for the base of the flower, densely pilose. Perigone puberulent within and without, the sepals ovate, obtuse, with strong midrib and mostly 6-nerved, in flower about twice the length of the obtuse, much narrower and somewhat thinner petals. Stamens wholly absent. Pistil two-thirds the length of the petals, the nearly sessile stigmas flattened, at length spreading. Fruiting calyx 3 cm. long. Immature fruit glabrous, 6-winged at the base, becoming 3-winged in the upper third by the confluence of the lower wings in pairs, the wings very acute.

Huachi, 1,800 feet, *Rusby and White,* August 18, 1921 (*no. 972*).

Amaranthaceae

Gomphrena lutea

Pilose, the slender white hairs mostly appressed, except about the nodes. Stems or simple ascending branches mostly about 8 to 15 cm. long, slender, sulcate, sparsely leafy, the internodes long. Heads terminal, about 1 cm. broad, yellow, closely subtended by a pair of small leaves. Leaves sessile, 1.5 to 2.5 cm. long, 4 to 6 mm. wide, lance-oblong, with narrowed base and acutely mucronate summit, entire, pale-green, minutely punctate against the light, the midrib stout, prominent beneath, the strongly ascending obscure secondaries about 3 on each side. Bracts hyaline with strong green midrib, 2 or 3 mm. long, broadly ovate, acuminate and very acute. Bractlets 5 or 6 mm. long, hyaline below, yellow above, long-acuminate and acute, slightly exceeding the densely long-pilose sessile flower. Sepals narrow, nearly equal, distinct to near the base, long-acuminate and acute, rigid. Stamen-tube a little shorter than the perigone, narrow, narrowed

upward, its ligules more than half the length of the oblong anthers, deeply cleft, the branches narrowly linear. Ovary subglobose, brown with a white crown. Style short, conic, about half as long as the 2 subulate obtuse yellow stigmas.

Ixiamas, 1,000 feet, *Martin Cardenas,* December 14, 1921 (*no. 1911*).

Petiveriaceae

Microtea scandens

Glabrous, the stems extremely slender, strongly sulcate, green. Petioles slender, 1 to 2 cm. long, often twisted. Blades 5 to 10 cm. long, 2 to 4 cm. broad, lanceolate, acuminate and acute, with the rounded base very abruptly contracted into the petiole, entire, very thin, bright-green, the 12 to 15 slender secondaries starting at almost a right angle with the midrib, becoming falcate toward the end, the venation sparse. Inflorescence very loosely paniculate, the branches filiform, elongate, subtended by very small, lanceolate or linear reduced leaves. Flowers white, loosely and at length distantly racemose, subsessile, 1.5 mm. broad. Fruit 1 mm. broad, globose, sharply tuberculate.

Ixiamas, 800 feet, *M. Cardenas,* December 18, 1921 (*no. 1942*).

Berberidaceae

Berberis edentata

Glabrous, except for a very minute downiness of the branches of the inflorescence. Branches stout, blackish, densely leafy, the leaves in crowded fascicles terminating short, thick, node-like branchlets. Stipules very variable in size, the largest about 7 mm. long, 3 mm. wide, triangular-ovate, carinate or 3-nerved, acute, thick and rigid. Petioles about 5 mm. long, stout, winged by the abruptly contracted leaf-base, the blades about 4 to 5 cm. long, by 1.5 to 2.5 cm. wide, oblong-oval or somewhat oblanceolate, entire, the margin narrowly thickened, yellowish and revolute, the rounded or blunt summit tipped by a very short pungent spine, the texture thick and rigid, the midrib very stout, the venation strongly prominent on both sides, densely anastomosing, the leaf drying of a yellowish-green color. Racemes stoutly peduncled, compound, apparently recurved or drooping. Flowers subsessile, but pedicelled in fruit. Sepals about 6 mm. long, 4 or 5 mm. wide, 3- or 5-nerved, oval. Petals about as long,

nearly orbicular, 3-ribbed at base and finely many-nerved. Stamens 9, equal, distinct, shorter than the petals, the filaments stout and fleshy, slightly broader downward, concave or channeled on the inner side, the anthers about half as long as the filaments, with blunt blackish terminal glands. Pistil as long as the stamens, the ovary oval, with a sessile, discoid, thick stigma two thirds as broad as the ovary.

A handsome shrub, 4 to 6 feet high, on sunny banks at Pongo de Quime, 11,500 feet, *O. E. White,* July 12, 1921 (*no. 169*).

Menispermaceae

Cissampelos violaefolia

Pubescent, with the upper leaf-surfaces subglabrous except on the principal veins. Stems slender, terete, densely short-pubescent. Petioles 5 to 8 cm. long, slender, channeled above, the blades 3 to 6 cm. long, 3.5 to 7 cm. broad, subrotund, cordate, the summit submarginate and minutely apiculate, entire, thickish, rigid, deep-green above, pale beneath, the venation prominent on both sides, especially beneath, strongly and very finely reticulate, 7- to 9-ribbed, the ribs all originating together at the summit of the petiole. Racemes 7 to 10 cm. long, the rachis stoutish, the bracts similar to the leaves, 1 to nearly 2 cm. broad, conspicuously and finely purple-veined, short-petioled. Flowers (only the pistillate seen) in fascicles of 6 to 10, on slender pedicels which are mostly longer than the petioles of the bracts. Calyx persistent, in fruit subrotund, entire, about 7 mm. broad and about twice as broad as the brown tuberculate fruit.

Ixiamas, 800 feet, *M. Cardenas,* December 20, 1921 (*no. 2015*).

Cissampelos ciliata

Stems, petioles, etc., sparsely pilose with long, white, divergent hairs, the leaf-surface sparsely strigose with similar hairs. Stems very slender, strongly 5-sulcate. Petioles 3 to 6 cm. long, strongly grooved on the upper surface, peltately attached about one fourth of the way from the base of the leaf. Blades 5 to 10 cm. long, and about as wide, ovate, with broad, nearly truncate base and obtuse but setose summit, entire, ciliate, thin, pale-green, especially beneath, the venation slender, coarsely reticulate, radiately 10 to 12-nerved, the ultimate branches of the nerves terminating in the margin. Staminate panicles fascicled, 3 or 4 cm. long, the peduncles and branches

filiform, the fully expanded flowers about 2 mm. broad, setose with long shining hairs. Pistilate racemes nearly 2 dm. long, including the filiform peduncle, loosely flowered, the bracts very unequal, the largest about 1 cm. broad, subrotund, thin, pale, ciliate, the flowers mostly about 5, short-pedicelled. Fruit brown, 6 or 7 mm. broad, subrotund.

This plant was first collected by Mr. Bang, at Coripata, March 4, 1894 (*no. 2074*) and doubtfully referred to *C. tropaeolifolia* DC. It was collected twice on the Mulford Exploration: Rurrenabaque, 1,000 feet, *M. Cardenas,* November 24, 1921 (*no. 1797*) and at the same place, *H. H. Rusby,* October 6, 1921 (*no. 811*). All these specimens perfectly maintain the specific characters.

Abuta boliviana

Scabrescent and more or less grayish throughout, the branches stout, terete, striate. Petioles 6 or 7 cm. long, slender, terete, nerved, the blades thick and rigid, 1 to 1.5 dm. long, 7 to 9 cm. wide, ovate, abruptly very short-pointed and acute, with truncate or subcordate base, entire, above pale-green and lightly scabrescent, with the principal veins impressed, beneath gray and harsh, with the stout venation prominent, 5-nerved, the lowest pair of nerves much weaker, connecting with the others by a series of strong loops near the margin, all connected by a loose and stout reticulation. Panicles axillary, branched from the base, very loose, the branches slender, the flowers sessile, or on very short and thick pedicels. Only staminate flower seen. Sepals 3-seriate, the outer very small, subconnate, the inner about twice as large as the second series, which are slightly fimbriate or ciliate. Stamens 6, equal and similar, all distinct, erect, the filament stout, slightly enlarged upward, the anthers broader than long.

Rurrenabaque, 1,000 feet, *O. E. White,* November 25, 1921 (*no. 1812*).

Somphoxylon (?) sp.

Glabrous or the inflorescence sparsely and minutely puberulent. Stems stout, of spongy texture, much wrinkled in drying, the branchlets slender, sharply nerved or angled. Petioles to 2 dm. or more long, very stout, strongly costate or angled. Blades to 2.5 dm. long, mostly a little longer than the petioles but sometimes shorter, ovate, nearly as broad as long, entire, trun-

cate or slightly cordate at the base, cuspidate, the cusp about 10 to 12 mm. long, obtusish; coriaceous, slightly lustrous above, strongly 3-ribbed, with a pair of smaller ribs below, about 3 principal secondaries on each side of the midrib, the venation slender, loosely reticulate, sharply prominent underneath, less so above. Panicles very large, diffusely and loosely branched, the very small flowers loosely racemed on the ultimate branchlets, subtended by rigid, acute, subulate, falcate bractlets, which are longer than the very short pedicels.

Staminate flowers nearly 1 mm. long, the bud obovoid, obtuse. Sepals apparently 3, distinct, ovate, obtuse, longer than the petals. Petals six, the outer about twice as large as the inner, ovate with narrowed base, the inner narrower. Stamens united about two thirds of their length.

Rurrenabaque, 1,000 feet, *H. H. Rusby,* October 19, 1921 (*no. 1289*).

Pistillate plant collected in fruit at the same locality, October 6, 1921 (*no. 796*). The leaves are less coriaceous, more cordate and less cuspidate. The panicle is small and long and slenderly peduncled, the fruits sessile. Fruits oval, 1.5 cm. long, 1 cm. broad, slightly inaequilateral, the style-scar terminal. Putamen finely verrucose, flattened on one side, lightly ridged on the back, the inside of the flattened side bearing a large hollow cylindraceous ridge which fits into the deep concavity of the flattened side of the seed.

I have little doubt that this plant pertains to an undescribed genus. It has the habit and general appearance of *Anomospermum,* but the floral structure excludes it from that genus. Its structure most nearly approaches that of *Somphoxylon,* but is apparently distinct therefrom. The flowers are not in good condition for study, and I have found it impossible to determine the minuter details.

Annonaceae

Porcelia Saffordiana

Twigs glabrous or minutely and closely puberulent, the flowers grayish-tomentellate. Branchlets slender, enlarging greatly in the fruiting stage. Petioles 5 to 10 mm. long, rather stout. Blades to 15 cm. long by 5 cm. wide, lanceolate, with rounded,

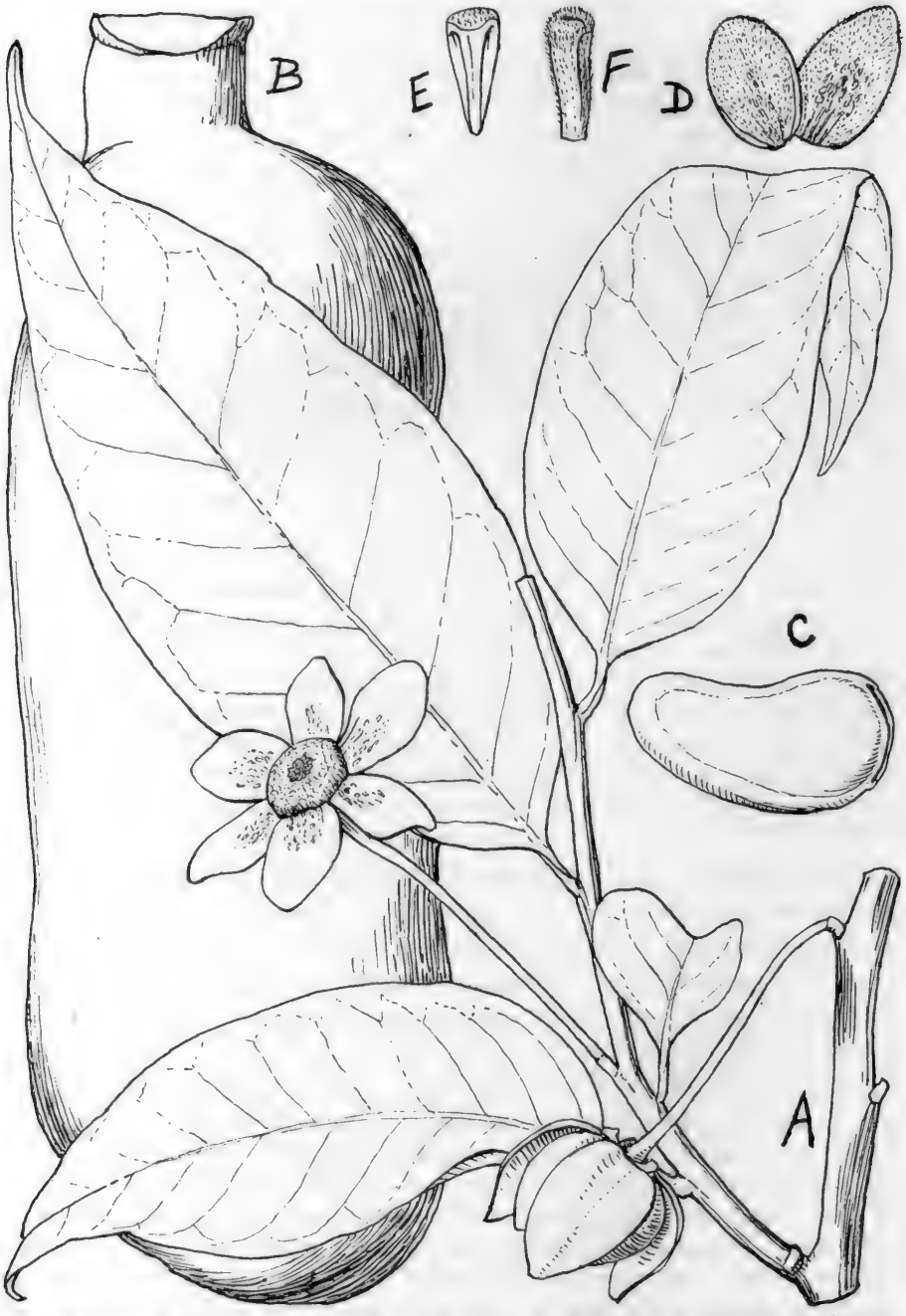

FIGURE 2. *Porcelia Saffordiana* Rusby. A, flowering branchlet; B, immature fruit; C, seed; D, inner (at left) and outer petal, inner faces; E, stamen, × 5; F, pistil, × 5.

often slightly produced base and acuminate and obtusish summit, entire, thick, glabrous, the slender venation lightly prominent beneath, the secondaries about 14 on each side, strongly ascending, connecting at some distance from the margin, the fine venation coarsely anastomosing. Flowers solitary or occasionally two together, the peduncles lateral, 5 cm. long, pendulous, slender, thickened and lightly angled toward the summit, where they are also tuberculate. Flowers deep-purple, the perigone thick and coriaceous, rotate, 4 cm. broad. Sepals 3, ovate, obtuse, 5 mm. long and broad, strongly recurved and the margin revolute. Petals 6, nearly equal, the inner relatively broader, elliptic, 2 cm. long, 12 mm. broad, strongly papillose-glandular on the lower half of the inner face, very finely and closely tomentellate on both surfaces, the margins of the inner 3 more or less involute. Stamen-mass convex, 12 mm. broad, obscurely 6-angled in outline, the stamens numerous, densely massed but distinct. Mass of pistils circular, about 7 mm. broad, depressed or slightly elevated, the pistils more than 20, densely massed but distinct, the stigmas ovate, oblique, with a strong central groove. Unripe fruit, said to be about two-thirds grown, on an enormously enlarged peduncle and weighing about 15 pounds, consists of 9 carpels, in three circles, those of the adjacent circles alternating. Stipes of the carpels 2.5 cm. to 3 cm. long and of equal thickness, the carpels about 15 cm. long and 6 cm. thick, of nearly equal thickness throughout, nearly cylindric, obtuse at both ends, glabrous. Wall of the pericarp about 1 cm. thick, the seeds in two series, embedded in a pulp similar to that of *Asimina,* which this fruit closely resembles. Seed blackish.

The whole of the above description is taken from specimens preserved in formaldehyde, all coming from one large branch brought to me by a native. Other branches brought at the same time and said to come from the same tree, are preserved on a mounted sheet, and differ so greatly that a full description of them is here appended.

The leaves vary from oval, with rounded base and summit, 3 to 7 cm. long by 2 to 4 cm. broad, to lanceolate and 11 cm. long by 4 cm. broad. One detached flower is identical with those above described. Another, that has lost its perigone and many of its outer stamens, appears to be wholly staminate. It is borne on a slender pendulous peduncle 5 cm. long, thickened and tuberculate toward the summit. Its torus is slightly convex and 6 mm. broad, and bears the concave scars where the petals and sepals and many stamens have disarticulated. It still bears about 30

of the central crowded but distinct stamens, which are 2 mm. long, about 0.5 mm. thick, and very slightly narrowed toward the base, prismatic and sulcate and surmounted by a cushion-like puberulent light-brown appendage that is broader than the anther. Another flower, mounted to show a lateral view, has petals only 4 mm. long.

A tree reaching nearly 100 feet in height, and with a trunk-diameter of several feet. The fruit is locally known as "Lucuma," and is highly prized by the natives.

Rurrenabaque, 1,000 feet, November 19, 1921 (*no. 1751*).

Porcelia ponderosa comb. nov.

Guatteria (*?*) *ponderosa* Rusby, Bull. N. Y. Bot. Gard. **6**: 504. 1910.

Guatteria cuspidata

(Fruiting specimen.) Nearly glabrous. Branchlets slender, flexuous, very leafy. Petioles about 5 mm. long, rather stout, blackish, minutely puberulent. Blades to 12 cm. long and 4.5 cm. broad, oblanceolate with obtusish base, the rounded summit very abruptly contracted into a short point; membranaceous, pale-green, the slender venation prominent on both sides, especially beneath, finely and strongly anastomosing, the secondaries about 10 on each side, widely spreading, strongly upcurved at the ends to loop together at some distance from the margin. Carpels few, black, very shortly stipitate, about 1 cm. long and half as wide, ellipsoidal, very minutely puberulent.

Collected at Lake Rogagua, 1,000 feet, *H. H. Rusby,* November 8, 1921 (*no. 1706*).

Guatteria lucida

(Fruiting specimen.) Glabrous. Branches elongate, stout, strongly ascending. Petioles 3 or 4 mm. long and nearly as broad, black. Blades to 2 dm. long and 7 cm. broad, oblanceolate with obtusish base and an extremely abrupt short obtuse point at the summit, entire, thin, shining on both sides, the very slender venation but little prominent, strongly and finely anastomosing, the secondaries about 13 or 14 on each side, strongly ascending and strongly connecting a short distance from the margin. Flowers 2 or more developing from a black lateral node. Fruiting pedicel 2 to 4 cm. long, upwardly thickened, the torus depressed-globose, nearly 1 cm. broad, the stipes about

2 cm. long, upwardly thickened, black, the carpels about 1.5 cm. long and half as wide, inaequilaterally ellipsoid, or slightly narrower below.

Covendo, 2,000 feet, *O. E. White,* August 26, 1921 (*no. 913*).

Duguetia ibonensis

(Fruiting specimen.) Heavily glandular-dotted. Branchlets elongate, slender, glandular-roughened, like the petioles and midribs of the lower surface. Petioles 7 or 8 mm. long, blackish, swollen at the base. Blades to 13 cm. long, 4.5 cm. broad, oblong, acute at both ends, the summit abruptly contracted into a short acumination or cusp. Blade thickish, smooth and shining above, coarsely punctate with white glands beneath, the midrib sharply prominent. Secondaries 15 or 18 on each side, widely spreading and connecting far from the margin. Torus apparently convex, the carpels 12 mm. long, 9 mm. wide, coherent about half way, the exposed portion blackish, the rest brown, 4- to 6-angled, the summit mostly obtuse. Seed nearly elliptic, 1 cm. long and half as broad, brown, very smooth and shining.

On the River Ibon, 500 feet, *O. E. White,* February 22, 1922 (*no. 2089*). "A tree of 10 to 20 feet, in deep, dark forest, in sandy loam. Fruit scarlet-crimson with black blotch on points. Pulp creamy and sweet. Eaten by natives."

Duguetia sp.

A single specimen of *Duguetia* was collected in fruit, neither leaves nor flowers being secured, which exhibits the following characters.

Branchlets very stout, glabrous. Fruits lateral, solitary, the peduncle 2.5 cm. long, 1 cm. thick, woody, bearing a thick annulus at the summit. Outer circle of 21 filaments densely crowded, woody, 14 mm. long, laterally flattened, the upper half thin and blade-like, acuminate, the lower half bearing 3 keels on the back, two of them marginal, the third dorsal and a continuation of the upper part, the broad base projected downward below the torus and slightly 3-toothed by the ends of the keels. Torus fleshy, hemispheric or higher, 3 cm. or more broad. Carpels, in the dried state, 2 cm. long, 13 cm. broad, 7 mm. thick, obovoid, the broadest portion about two-thirds of the way from base to summit. Lower portion blackish, sharply keeled on both sides and both edges. Upper portion brown, wrinkled, puberulent or pul-

verulent, bearing the short thick style-base. Pulp thin. Seed 2 cm. long, 8 mm. wide, oblong, blackish. Endosperm in numerous transverse folds.

None of the species described has a fruit approaching this in size, but I do not care to name it without first seeing leaves and flowers.

Locality and date unknown.

Trigynaea Periquino

(Fruiting specimen.) Glabrous. Branchlets slender, terete, reddish-brown. Petioles 7 or 8 mm. long, stout, flattened above. Blades to 2 dm. long, and 8 cm. broad, oblong, somewhat oblique, with oblique acute or obtusish base and very abruptly short-acuminate and acute summit, entire, coriaceous, shining above, with the midrib prominent, the midrib and secondaries prominent beneath, the secondaries 14 to 16 on each side, widely spreading, with the ends upcurved and strongly connecting at some distance from the margin, the fine venation obscure, the leaf minutely and densely pellucid-punctate. Position of flowers not determinable from the specimen. Fruiting peduncle 3 mm. long and thicker than its length. Carpels apparently 3 or 4, on a nearly plane torus, the stipe 2 to 3 cm. long, stout, bearing a thick annulus at the base of the carpel, which is occasionally nearly 5 cm. long, varying from globose to short-ellipsoid, rounded at both ends, glabrous. Seeds in a single series, elliptic, vertically flattened, horizontal, 2 cm. long, 12 mm. broad, papillose, brown.

Esperanza Falls, *O. E. White,* March 12, 1922. "Dark-red, with brown seeds. Very sweet and pleasant. Locally called 'Periquino.' "

LAURACEAE

OCOTEA PSEUDO-COTO Rusby, Bull. Torrey Club **49**: 261. 1922. (*No. 1050*).

NECTANDRA COTO Rusby, Bull. Torrey Club **49**: 260. 1922. (*No. 1048, 1050.*)

ACRODICLIDIUM BENENSE Rusby, Bull. Torrey Club **49**: 262. 1922. (*No. 649.*)

CRASSULACEAE

ECHEVERIA WHITEI Rose, Addisonia **10**: 44. *pl. 344.* 1925.

CUNONIACEAE

Weinmannia geometrica

Glabrous, except for the ferruginous chaffy scales clothing the young branchlets. Stems much branched, brown, angled. Leaves 4 to 8 cm. long, 2 to 4 cm. broad, sessile. Leaflets 11 to 21, mostly about 15, thin, deep-green, sessile or subsessile, 8 to 20 mm. long and two thirds as broad, rounded above and with acute or cuneate base, serrate-dentate, about 4 teeth on each side, the teeth and sinuses acute. Wings of the rachis rhomboidal, with cuneate base, about two thirds as wide as their leaves and extending completely from leaflet to leaflet. Flowers not seen. Fruiting racemes peduncled, the fruits mostly 2 or 3 together, the pedicels filiform, 3 or 4 mm. long. Capsules about as long, exclusive of the persistent styles, broadly oval.

Pongo de Quime, 11,500 feet, *O. E. White,* July 12, 1921 (*no. 160*). Species very near *W. fagaroides,* but quite distinct.

AMYGDALACEAE

Hirtella acuminata

More or less ferruginous-hirsute throughout. Branchlets slender, terete, leafy. Stipules slenderly subulate, green, nearly 1 cm. long, acute. Petioles very short, nearly as broad as long. Blades to 1.5 dm. long, and 4 cm. broad, lanceolate, with blunt base and acuminate and acute summit, entire, thin, deep-green on both sides, pubescent on the midrib above, ferruginous-hirsute on the veins beneath, the midribs and secondaries slender, the latter 12 to 15 on each side, strongly ascending and looped together a short distance from the margin, the venation strongly anastomosing. Panicles terminal and occasionally axillary, short-peduncled, densely short-hirsute with spreading hairs, rather densely flowered, the branches subtended by very small bracts. Pedicels 3 mm. or less long, the buds obovate with rounded summit. Sepals 5 or 6 mm. long, slightly unequal, oval, obtuse, thick, strongly recurved. Petals 4 mm. long and nearly as wide, obovate with rounded summit, thick. Stamens 6, the longest 12 to 15 mm. long, the style a little longer. Drupe, in the dried state, 1.5 cm. long, 1 cm. wide, obovoid with rounded summit.

Species apparently related to *H. lightioides* Rusby, but entirely distinct. Along the cataracts of the Bopi River, 3,000 feet,

H. H. Rusby, September 11, 1921 (*no. 652*). "A large slender shrub in the edge of the forest. Petals white; stamens blue."

Hirtella stipitadenia

Tomentellate and more or less stipitate-glandular. Stipules deciduous, not seen. Petioles 5 mm. long, and almost equally thick, the base spongy-thickened. Blades to nearly 2 dm. long and a third as wide, oblong or oval, with rounded or subcordate base, short-acuminate and acute or obtusish summit, and entire revolute margin, coriaceous, very rugose, the upper surface slightly shining, nearly glabrous, with the midrib prominent and all the smaller venation strongly impressed, beneath densely rough-hairy, all the venation strongly and sharply prominent and strongly anastomosing, the secondaries 12 to 14 on each side, widely spreading and strongly falcate toward the ends. Racemes more or less panicled at the ends of the stout branchlets, sometimes 3 dm. long, stout, densely short-tomentose, light-ferruginous, loosely flowered. Bracts deciduous, 5 mm. long, narrowly subulate, acute. Pedicels about as long as the bracts, thick, shaggy, bearing a variable number of stipitate glands, often 5 mm. long, the stipes slightly thickened upward, the glands capitate, small. Flowers not present. Sepals persistent at the base of the fruit, 5 mm. long and half as wide, ovate, obtuse. Fruit black, smooth or with a few bristly hairs, 1 cm. long and half as wide, oval, 3-sulcate or 3-lobed, the summit truncate or lightly 3-lobed.

Rurrenabaque, 1,000 feet, *H. H. Rusby,* October 4, 1921 (*no. 768*). A large shrub, the agreeable edible fruit known locally as "Urura." Species very near *H. silicia* Griseb.

Mimosaceae

Inga canaminensis

(Euinga.) Short-tomentose throughout. Branchlets stout, terete, flexuous, ferruginous, like the peduncles, etc. Petioles about 3 cm. long, stout, the rachis about 4 times as long, its internodes mostly 4, the upper successively longer, winged, the breadth 8 to 12 mm., broader at the summit, which is broadly rounded to subtruncate, the glands small, circular, their light-brown rim little elevated. Leaflets usually with petioles nearly as broad as long, the lower slightly smaller than the upper, to 12 cm. long and 3.5 cm. broad, oblong or slightly oblanceolate, with

rounded, slightly inequilateral base and short-aristate summit, entire, pale or grayish-green on both sides, the venation lightly impressed above, prominent beneath, the secondaries about 14 on each side, with some short intermediate ones, ascending and lightly curved, connected by very many crooked tertiaries. Racemes axillary and terminal, solitary or two or three together, the angled peduncles nearly twice as long as the very densely flowered rachis. Calyx ferruginous, 5 mm. long, 4 mm. broad, campanulate, the lobes 1.5 mm. long, obtuse, erect. Corolla sericeous, nearly 2 cm. long, infundibular-campanulate, the lobes about 6 mm. long, ovate, obtusish. Stamens 5 to 6 cm. long, adnate to the very base of the calyx, connate for about 1 cm. Ovary very small and apparently sterile in my specimens. Style shorter than the stamens, the stigma capitate, very small.

Canamina, 4,000 feet, *O. E. White,* July 20, 1921 (*no. 436*). "A small tree, with creamy-white flowers. Long pod." Species very near *I. edulis* Mart.

Inga apiculata

(Euinga.) Tomentose. Branchlets stout, ferruginous, roughened with small whitish lenticels. Stipules not seen. Petioles 1.5 to 2 cm. long, stout, subterete. Leaflets 4 or 5 pairs, the lower successively smaller. Rachis to 1 dm. or more long, the internodes margined, the upper successively wider, the uppermost nearly 1 cm. wide at the summit, narrowing downward, the lowest little more than half as wide, a small circular gland between each pair of leaflets, the rim whitish, the concave center dark. Largest terminal leaflets nearly 2 dm. long and half as wide, oval or obovate with broadly rounded sessile base and an abrupt narrow, tapering and acute summit, entire, thick, bright-green and lightly tomentellate on both sides, slightly shining, especially beneath, where the slender venation is prominent. Secondaries 12 or 14 on each side, ascending at about 45° and lightly curved, connected by numerous crooked tertiaries, the finer venation closely and strongly anastomosing. Panicles terminal, peduncled, the peduncles stout, narrowly winged. Branches of the panicle peduncled, the branches suberect, the upper portion densely flowered, the flowers somewhat sericeous. Calyx 1 cm. long, narrowly campanulate, many-nerved, the obtuse lobes brownish, about a third of the length. Corolla a little more than twice the length of the calyx, infundibular, the mouth spreading, the lobes a fifth of the length, obtuse. Stamens light-brown, about twice the length of the corolla, nearly free, united nearly

half way. Ovary 5 mm. long, about twice as thick as the style, which equals the stamens, sinuously curved at the end. Stigma very small.

Espia, 3,500 feet, *O. E. White,* July 25, 1921 (*no. 607*). "Small tree on river bank. Flowers white." Species near *I. chrysotricha* Pittier.

Inga trigyna

(Euinga.) Densely short-tomentose throughout, with the exception of the upper leaf-surface. Branchlets stout, lightly costate, ferruginous. Stipules not seen. Leaves (only the upper seen) sessile, the stout rachis 2.5 dm. long. Leaflets four pairs, or three pairs by the suppression of those at the sessile base, the lower successively smaller, all sessile, the uppermost 2.5 dm. long, 12 cm. broad, oval, varying to slightly broader above or below the middle, with rounded base and slightly produced obtusish summit, thin in consideration of their size, the upper surface nearly glabrous and somewhat shining, pilose on and near the midrib, the principal veins narrowly impressed, softly ferruginous-tomentose beneath, with all the venation sharply prominent. Secondaries about 20 on a side, with very short intermediates, widely spreading and moderately falcate, strongly looped together close to the thinly revolute margin, strongly connected by crooked tertiaries, the venation strongly anastomosing. Glands circular, very small, nearly concealed in the tomentum. Wings of the rachis complete, rhomboidally obovate, obtuse at both ends, the upper successively longer, the uppermost 9×6 cm. Panicle (but one seen) terminal, small, stoutly peduncled, the flowers crowded, closely sessile. Calyx-tube narrowly infundibular, nearly 2 cm. long, about 5 mm. broad, usually slightly contracted at the mouth, about twenty-nerved, the teeth subulate, nerved, attenuate, the longest more than 1 cm. long. Corolla densely white-sericeous, the tube narrowly infundibular, longer than the calyx, the lobes 4 or 5 mm. long, ovate, obtuse. Stamen-tube nearly 1 cm. longer than the corolla, the free portion of the stamens about 2 cm. long. Pistils three, the ovary very slender, 3 mm. long, the styles unequal, the longest nearly equalling the stamens. Fruit not seen.

Rurrenabaque, 1,000 feet, *H. H. Rusby,* October 8, 1921 (*no. 833*).

"A tree in the edge of the forest, with white flowers."

Inga ellipsoidea

(Euinga.) Densely gray-tomentellate throughout. Branchlets very stout, finely many-costate or nerved. Leaves (only the upper seen) petioled, the petioles very stout, somewhat dilated at the base, about two-fifths as long as the rachis, obscurely angled or costate. Leaflets four pairs, subsessile, the glands of the rachis small, deep, with sharply elevated margins. Upper wings of the rachis complete from node to node, the lower not quite complete at the base, the upper successively broader, linear-oblanceolate, the uppermost 12 mm. wide. Leaflets larger upward, the uppermost 3 dm. long, 1 dm. wide, oval with rounded or subcordate base and abruptly acuminate and acute summit, rather thin, but rigid, the indumentum slightly rough, much denser underneath. Venation slender, slightly prominent above, sharply so beneath, the secondaries about 20 on each side, with shorter intermediates, widely spreading, little curved except at the ends, where they are sharply up-curved to connect with a tertiary of the next one above, connected elsewhere by numerous rather straight tertiaries. Spikes normally axillary, but somewhat crowded at the ends of the branchlets, with the subtending leaves often wanting or replaced by large ovate acute bracts. Peduncles (in the young state, with buds still wholly unopened) 1 dm. long, erect or strongly ascending, stout and rigid, many-nerved, bracted above near the flowers as well as beneath the flowers. Spikes in this young state about 6 cm. long, 2 cm. broad, cylindric, truncate, densely flowered. Bracts 12 mm. long, ovate, acuminate, acute or obtusish, shorter than the calyx, which is coriaceous, the tube narrowly campanulate, 1 cm. long, the lobes 3 mm. long, broadly ovate and obtuse.

Along the Bopi River, 3,000 feet, *H. H. Rusby,* Sept. 11, 1921 (*no. 660*).

Inga radiata

(Section Leptinga.) Pubescent throughout and somewhat ferruginous, the branchlets elongate and slender. Leaves sessile or nearly so, 4- or 6-foliolate in my specimens, the rachis 4 to 8 cm. long, about 1 cm. broad, including the wings, which are broadest at the truncate or subcordate summit, and taper gradually to the base, which does not extend quite to the very short petiolules. Leaflets 7 to 15 cm. long, 3.5 to 7 cm. broad, the lower successively smaller, oval-obovate, with blunt, or subcordate base and abruptly acuminate and obtuse summit, entire, thin, bright-green, the venation mostly slightly impressed, and

puberulent on the upper surface, thin and lightly prominent on the pubescent lower surface, with the venation loosely anastomosing, the secondaries about 8 to 12 on a side, falcate and obscurely connecting near the margin. Umbels 1 to 3, short-pedunculate or sessile, subspheric, the flowers rather loosely radiating, the pedicels filiform, sharply angled, about 6 mm. long. Calyx-tube about 1.5 or 2 mm. long, narrowly campanulate, the upper portion somewhat contracted, the limb 5-toothed, about half the length of the tube, the linear-subulate teeth with incurved summits. Corolla-tube narrowly infundibular, about 4 mm. long, the limb about half as long, the lobes ovate, erect. Stamen-tube about as long as the corolla-tube, very narrowly infundibular. Free portion of the filaments as long as, or exceeding the rest of the flower and shorter than the styles, the anthers and stigma very small. Fruit not seen.

Spreading over river-banks, on the River Ibon, Beni, 400 feet, *O. E. White,* February 18, 1922 (*no. 2393*). "A low tree, 30 to 40 feet high." Species near *I. myriantha.*

Pithecolobium angustifolium (Rusby)

P. sophorocarpum (?) *angustifolium* Rusby, Mem. Torrey Club 6: 28. 1896

This plant, originally collected by Miguel Bang, near Guanai, in 1892, has been again collected (*no. 1752*), at San Buena Ventura, 1,000 feet, November 22, 1921, by M. Cardenas, who reports it as "a large tree, with red fruits." The latter specimens agree in every respect with those of Mr. Bang, showing that the differences between it and *P. sophorocarpum* Benth. are constant over a wide region. I can no longer doubt its specific distinctiveness. The legume consists of about 10 or 12 joints, which are completely separated by short constricted portions. The joints are verrucose, especially before maturing, and all parts of the fruit are ferruginous-tomentellate.

Pithecolobium dependens

(Section Caulanthes.) Glabrous, the branchlets slender. Leaves 1-jugate, the pinnae 2-jugate, but one of the lower pairs wanting, the petiolules and petioles 1 to 1.5 cm. long, slender, like the rachis, which is about 3 or 4 cm. long, lightly 2-grooved

on the upper surface. Stipules wanting, the glands small. Leaflets sessile, 6 to 15 cm. long, 2 to 6 cm. broad, the odd one much smaller, inequilaterally lance-oblong, acuminate and acute at both ends, entire, thin, pale-green, the venation very slender, lightly prominent on both sides, the secondaries few, very unequal, connected by the loosely anastomosing tertiaries. Spikes loosely flowered and raceme-like, solitary or fascicled from knots upon the trunk and large branches, recurved or pendulous, 2 or 3 dm. long, shortly peduncled, the rachis very slender, the flowers of a beautiful rose pink. Flowers solitary, sessile, with a very small subulate bract. Calyx 1 mm. long, the teeth very short, acute. Corolla 7 or 8 mm. long, the tube 1 mm. thick, slightly longer than the abrupt limb, which is more than twice as broad, its lobes erect, triangular-ovate, acute, thickish, each 3-costate. Stamens very numerous, very slender, their exserted portion 2 or 3 times as long as the corolla, united to about the middle, the anthers very small, the base of the filaments adnate to the corolla. Ovary oblong, 1.5 mm. long, the style rather stout.

Bopi River, 3,000 feet, *H. H. Rusby,* August 10, 1921 (*no. 568*). A small tree on the river-bank, clothed with beautiful, rose-pink, pendulous spikes, the flowers covered with ants so small as to be scarcely visible.

Pithecolobium bifoliolum

Glabrous, the branchlets slender. Leaves 1-jugate, each petiolule (in the one leaf seen) bearing but one leaflet, the others being suppressed so as to make the leaf apparently only once pinnate. Petiole 1 cm. long, the petiolule a little shorter, the glands small and obscure. Leaflets subequal, 18 cm. long, 8 cm. wide, inequilaterally ovate, abruptly very short-acuminate and obtuse at the summit, the broad base very abruptly contracted, thin, pale-green, the venation very slender. Spike 4 dm. long, slenderly peduncled, recurved, the rachis very slender, loosely-flowered, recurved, the flowers minutely bracted, subsessile. Calyx 1 mm. long, cupulate or urceolate, the teeth very small, acute. Corolla 10 mm. long, the tube two thirds of the length, the lobes ovate, acute, 3-ribbed. Exserted portion of the very numerous, very slender stamens two or three times the length of the corolla, the filaments connate for about half of their length.

This is possibly a variety of the preceding, to which its habit is very similar. It differs in its broader, solitary leaflets, with shorter petioles, and its longer flowers, the corolla-tube relatively much longer. (*No. 959.*)

Calliandra stricta

Glabrous, the branchlets slender, leafy. Stipules to 6 mm. long, ovate, long-acuminate, pungent, somewhat indurate. Petioles 1 to 2 cm. long, the petiolules a little shorter, both slender, channeled above. Leaves 1-jugate, 2 pairs of sessile leaflets on each pinna, the lower pair very much smaller. Glands obliquely placed at the base of the leaflet, so as to partly face each other, blackish, surrounded by a thickened yellowish ring. Leaflets 10 to 35 mm. long, 3 to 12 mm. wide, lanceolate or oblong, blunt at both ends, with a very slight mucro at the summit, thickish, shining above, subtrinervate, the venation slender, very prominent beneath. Heads fascicled in the axils, successively produced, short-peduncled. Calyx 2 mm. long, cupulate, the teeth very small. Corolla 8 mm. long, the lobes short, triangular-ovate, obtuse. Exserted portion of stamens twice the length of the corolla.

San Buena Ventura, Beni, 1,000 feet, *M. Cardenas,* December 1, 1921 (*no. 1739*). "A small shrub, with red flowers, on the river bank."

Acacia rurrenabaqueana

Closely and densely gray-puberulent. Branchlets slender, strongly sulcate, unarmed. Stipules not seen. Petioles short, stout, flattened above, a large brown gland at or near the first pinnae, the glands of the rachis frequently absent. Pinnae about 8 pairs. Petiole and rachis together about 1 dm. long, the pinnae 5 to 7 cm. long, the lower shorter. Pinnules of the longer pinnae 25 to 30 pairs, sessile, 7 mm. long, 1.5 to 2 mm. wide, the upper side about a fourth of the width of the lower, the base of which is slightly hastate, the summit slightly upcurved, acute and apiculate. Margin thickened. Secondaries stout, about 4, strongly interarching near the margin. Surfaces grayish-green and minutely puberulent. Panicles terminal and in the upper axils, large and compound, the globose heads on slender peduncles shorter than themselves, 1 cm. or less broad, yellow, very dense, the bracts at the base of the pedicel narrowly subulate, acuminate and acute. Calyx campanulate, about two thirds as long as the 5 oblanceolate obtuse petals, lobed half way or more. Petals nearly 2 mm. long. Stamens about 40, nearly distinct, about 5 mm. long. Ovary very small, oblong, the style filiform.

Rurrenabaque, 1,000 feet, *M. Cardenas,* January 25, 1922 (*no. 2043*). "A medium-sized tree, in sandy loam."

Acacia ampeloclada

(Fruiting specimen.) Minutely puberulent. Branchlets slender, reclining or climbing, flexuous, brown, coarsely angled, armed with pairs of divaricate thorns which are about 1 cm. long, stout, the base vertically elongated and the base decurrent, lightly recurved, shining, very pungent. Petioles 1 to 2 cm. long, about a fifth of the length of the leaf, slender, like the rachis and its branches, grooved above. Pinnae about 12 pairs, about 4 or 5 cm. long, the pinnules about 40 pairs on a pinna, sessile, about 4 mm. long, and a fifth as wide, oblong, slightly falcate, truncate at the base, the lower side of which is about 3 times as wide as the upper, the margin ciliate, pale-green on both sides. Fruiting panicle large, much branched, the branches tuberculate or muricate. Pods on a slender, erect-spreading stipe a fifth to a fourth of their own length, about 8 cm. long, nearly 2 cm. wide, oblong, with slightly produced base and very shortly cuspidate summit, strongly flattened, with narrowly thickened margin, glabrous and somewhat shining, the elevated venation coarsely anastomosing, mostly 6-seeded normally, some seeds usually wanting. Seeds in the middle line, about 6 mm. long, obovoid with truncate or depressed summit, brown, shining, on slender funicles.

Espia, 3,000 feet, *H. H. Rusby,* August, 1921 (*no. 284*). A low tree with trunk a foot in diameter, much branched, the ultimate branches becoming long-climbing vines.

Caesalpiniaceae

Bauhinia humilis

Softly tomentellate, the leaves more or less pubescent. Stems slender, the branchlets elongate, terete. Stipules very small, deltoid, acute. Spines about 2 mm. long and nearly as broad at the base, triangular, laterally compressed, acute, light-brown, mostly a little reflexed. Petioles to 2.5 cm. long (or longer?) rather slender. Blades to 8 cm. long in my specimens, with cordate acute sinus and rounded lobes, the divisions nearly 2 cm. broad, divided about two thirds of their length, the sinus acute, the divisions moderately spreading, lanceolate, nearly equilateral, with blunt summit, 5-ribbed, the ribs stout and prominent beneath, the surface nearly glabrous above, tomentellate beneath. Racemes (bearing mature fruit only) terminating the branchlets, elongate, slender, the flowers from the axils of diminutive leaves, the pedicels about 1 cm. long, stout, the calyx

persistent, nearly 1.5 cm. long, slender, strongly ribbed. Stipe of the legume nearly twice the length of the calyx, stout. Pod to 15 cm. long, about 1 cm. wide, many-seeded, light-brown, tomentellate, acute or shortly mucronate. Seed nearly circular, 6 or 7 mm. broad.

Reyes, 1,000 feet, *H. H. Rusby,* October 25, 1921 (*no. 1311*). A low and slender shrub.

Bauhinia vulpina

Hirsute throughout except on the upper leaf-surface, with divergent strongly ferruginous hairs. Branchlets short, rather stout, divaricate, coarsely angled. Stipules not seen. Tendrils stout, simple. Petioles 2 to 3 cm. long, slender. Blades 3 to 6 cm. long, 2 to 3.5 cm. wide, cordate with acute or acutish sinus, which is broader than deep. Leaf bifid nearly half way, the sinus open, very acute, aristate; thin, subglabrous on the upper surface, except toward the base, each half 4-nerved, the venation prominent on both surfaces, strongly, finely and crookedly anastomosing. Racemes terminating the branchlets, long-peduncled, the flowering portion dense, conical, about as broad as long, mostly recurved. Bracts nearly 1 cm. long, ovate, acuminate, several-dentate with aristate teeth, membranaceous, strongly veined. Pedicel a little shorter than the calyx. Bractlet linear, about as long as the campanulate calyx-tube, which is brown, strongly 15-nerved, contracted at the mouth, where it is pilose internally, the 5 teeth shorter than the tube, equal, green, thin, ovate, acute, 1- or 3-nerved. Petals about 8 mm. long, ovate, obtusish, thick, strongly veined, pilose externally and at the base internally, the stout claw about a third the length of the limb. Stamens 10, very unequal, much shorter than the petals, the filaments stout and rigid, the anthers ovoid, short and broad. Ovary ovoid, obtuse, densely coarse-pilose. Immature pod 7 cm. long, 2.5 cm. broad, strongly flattened, oblong, apparently 2-seeded, the summit rounded, the margin thickened and hirsute, especially toward the summit, and tipped with the short, thick, hirsute style.

Huachi, 1,800 feet, *O. E. White,* August 14, 1921 (*no. 956*). "A woody climber with pink flowers, in sandy loam in sunny exposures."

CARDENASIA gen. nov.

Calyx-tube extremely short, turbinate, the limb campanulate, inflated before flowering, costate, 5-toothed, the teeth very small and two of them nearly obsolete, imbricate, five of the ribs ex-

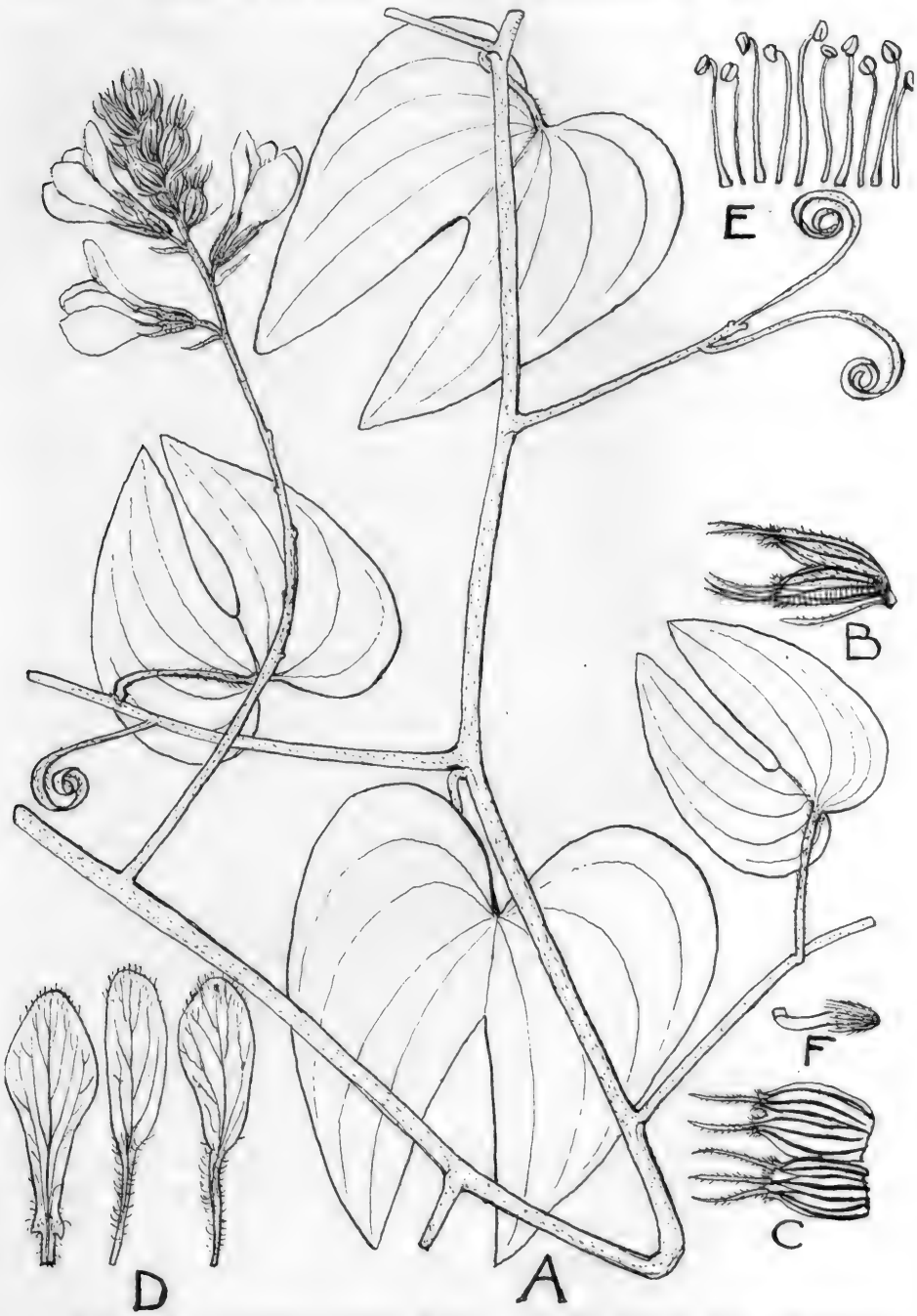

FIGURE 3. *Cardenasia setacea* Rusby. A, leafy branch, with inflorescence and tendrils; B, irregularly fissured calyx, × 2; C, calyx showing five awns, × 2; D, three petals, × 2; E, the stamens, × 3; F, ovary and style, × 2.

tended into setaceous awns, alternating with the teeth, the awns free before as well as after flowering. After flowering, the mouth of the calyx somewhat contracted, but the limb more or less deeply 2-cleft. Petals subequal, unguiculate, pilose. Stamens 10, irregularly subequal, all perfect, nearly distinct, free, five of the filaments slightly dilated at the base, the anthers short, oval. Stipe of the ovary short, adnate to the disk. Ovary oblong, densely pilose, several-ovuled. Style elongate, sigmoid, very thick, the stigma truncate. Fruit not known.

A cirrhiferous climber, of sympodial growth, the pseudo-branches opposite the leaves and terminating in simple racemes, the pedicels setaceous-bracted, the leaves 2-lobed, the stipules caducous. Genus related to *Schnella.*

By those who believe in maintaining the integrity of the genus *Bauhinia,* as treated by Bentham and Taubert, this plant will doubtless be referred to that genus, in spite of its conspicuous long awns. I can not doubt, however, that the genus *Bauhinia* will in the future be resolved into a number of genera. If so, this must certainly be held distinct.

Cardenasia setacea

Puberulent on the young branches, etc., the flowers pilose. Stems very slender, angled, unarmed, cirrhiferous, the tendrils occasionally bearing a few flowers. Stipules not seen. Tendrils strongly circinate, flattened, about 1 to 1.5 mm. wide. Petioles to 4 cm. long, very slender, thickened at the summit. Blades to 10 cm. long and about equally wide, strongly cordate with regularly rounded lobes and obtuse sinus, divided three fourths of the way, very thin, glabrous, the slender venation prominent on the upper surface. Divisions of the leaf almost regularly lance-ovate, entire. Racemes terminating the pseudo-branches short and broad, densely flowered. Pedicels about 5 mm. long, very slender, bracted near the summit, the bracts longer than the pedicel, linear or almost filiform, acute. Calyx nearly 1 cm. long, strongly ribbed, the teeth proper very small, five of the ribs extended into setaceous awns, which are subequal and about as long as the tube. Petals nearly 2 cm. long, spatulate, subequal, pilose, especially on the claw, which is nearly as long as the limb, strongly nerved. Stamens 10, perfect, subequal, about as long as the calyx-tube. Ovary densely pilose, the style nearly as thick as the ovary, curved, blunt.

San Buena Ventura, 1,000 feet, *Martin Cardenas,* November, 1921 (*no. 1195*). "A woody climber, with white flowers, growing in the forest."

FABACEAE

Lupinus Guggenheimianus

Sericeous throughout. Stems slender, much branched, the branchlets short, erect, terete, leafy. Stipules very small, subulate, brownish. Petioles 2 to 4 cm. long, slender, abruptly dilated at the base. Leaflets mostly 7, 1.5 to 4 cm. long, 3 to 8 mm. wide, oblanceolate with acute base and obtuse minutely mucronate summit, the mucro acute; entire, strongly sericeous on both surfaces. Flowers not seen, only the empty twisted valves of the legume present, some of them bearing the vestiges of the androecium and the style. Androecium about 1 cm. long, the united portion slightly shorter than the free filaments, which are extremely slender. Legumes in their twisted condition 2 cm. long, light-brown, densely hirsute. Style about 8 mm. long, very slender.

Pongo de Quime, 11,500 feet, on a dry mountain-side, *O. E. White,* July 12, 1921 (*no. 170*). Species dedicated to the Guggenheim Brothers, from whom we received most valuable assistance at a critical time.

Hoita versicolor

Gray-tomentellate, the calyx blackish. Branches stout, terete. Stipules small, subulate from a broad base, acuminate, acute, subcarinate. Petioles slender, to 4 cm. long, the petiolules about 2 mm. long, the rachis about twice their length, all finely black-glandular. Leaflets to 5 cm. long and 2 cm. broad, ovate, short-acuminate, with rounded base, thick, densely glandular and roughish, minutely hairy, the venation impressed above, the secondaries about 8 to 10 on a side, ascending and lightly falcate. Peduncles 4 or 5 times the length of the rachis, which is densely flowered. Bracts caducous, elongate, attenuate. Calyx-tube inequilateral, campanulate, 3 mm. long, the teeth nearly as long, triangular, acuminate and acute, slightly unequal, the entire calyx densely white-glandular. Vexillum about 9 mm. long, 5 mm. wide, the limb nearly orbicular, the summit emarginate, the base rather abruptly contracted into a short broad claw. Auricle of the wing more than half the length of the very slender claw, broadly triangular-acuminate. Auricles of the keel broadly tri-

angular, the base truncate, the claw very slender. Free portion of filaments about one-sixth of the length. Ovary small, oblong.

La Paz, 11,000 feet, *M. Cardenas,* April 29, 1922 (*no. 48, special*). Species very near *H. hirsuta,* but differing in glands and indumentum and in form and relative dimensions of the floral parts. Flowers white, streaked with blue. A shrub 2 meters high.

Hoita hirsuta

Densely pilose with short white divergent hairs. Branches ascending, flexuous, nodose, dark-colored, terete but strongly nerved. Stipules mostly reflexed, 5 to 8 mm. long, regularly acuminate from the base to the acute summit. Petioles 2 to 3 cm. long, slender, the petiolules 3 mm. long, the rachis about 3 times as long. Leaflets 3 to 6 cm. long, 8 to 16 mm. wide, the terminal not much longer than the lateral, all lanceolate with acutish base and long-acuminate and acute summit, entire, thickish, densely and minutely black glandular-dotted on both sides, minutely hairy, the strongly ascending secondaries 8 or more on a side, slender, the venation obscure. Peduncles stout, longer than the rachis, which is densely flowered, the flowers imbricate, nearly sessile. Calyx-tube campanulate, mostly somewhat inaequilateral, about 4 mm. long and 3 mm. broad, 5-ribbed, with about 10 nerves, the subulate acuminate acute teeth about half as long. Vexillum light blue, obovate, 1 cm. long, 4 mm. broad, the base gradually tapering. Wings a little longer than the vexillum and the keel, and of the same color, adnate to the keel almost to the summit. Free portion of keel deep-purple, concave, obtuse, the base short-auriculate, the wings with long linear-attenuate caudae nearly half as long as their claws. Filaments coherent nearly four fifths of their length. Ovary irregularly obovoid, densely glandular-puberulent, the slender style white, slightly thickened and flattened upward.

Pongo de Quime, 11,500 feet, *O. E. White,* July 12, 1921 (*no. 154*).

Parosela pilocarpa

Glabrous, with the exception of the densely long-pilose inflorescence. Stems very slender, the branchlets widely spreading, terete. Leaves nearly sessile, the rachis about 2 cm. long, the leaflets mostly 9, opposite, nearly sessile, 3 to 5 mm. long, 1.5 to 2 mm. wide, oval or slightly obovate, with rounded summit and obtuse base, entire or almost imperceptibly crenulate, thick,

pale-green, minutely and rather sparsely black-glandular. Spikes slenderly peduncled, 1 to 2 cm. long and 1 to 1.5 cm. thick, densely flowered. Bracts 5 mm. long, boat-shaped, keeled, sharply acuminate, thin, brown, long white-pilose, bearing a number of longitudinally elongated brown spots. Calyx a little longer than the bract, the tube hemispheric-campanulate, the teeth linear-attenuate, unequal, about twice the length of the tube, long-pilose like the bract. Corolla a half longer than the calyx. Fruit strongly compressed, densely pilose, triangular in outline, bearing the long densely hirsute style.

Espia, 3,500 feet, *O. E. White,* July 25, 1921 (*no. 609*). "1 to 3 feet high, in sunny places in the river-bottom, the flower violet."

Parosela oblongifolia

Puberulent, the stems elongate, slender, little branched, light-reddish-brown. Stipules 4 or 5 mm. long, narrow, attenuate from the base, thin, reddish. Leaves mostly 2.5 cm. long, the petiole about 1/5 of the length, the leaflets 13 to 17, opposite, very shortly petiolulate, each subtended by a gland that is larger than the others on the rachis. Leaflets 5 to 7 mm. long, 1.5 to 3 mm. wide, oblong or slightly oblanceolate, with subrotund base and rounded summit, mucronate, entire, the margin slightly involute in drying, thickish, profusely black-glandular on the lower surface, the venation obscure. Spikes terminating the upper branchlets, dense, at length elongate. Bracts boat-shaped, 5 mm. long, 1.5 mm. wide, as folded, the linear straight beak about 1/3 of the length, this and the keel blue, the body greenish-white. Calyx campanulate, 5 or 6 mm. long, gray-pilose, bearing 8 or 10 strong green ribs, the teeth triangular, acute, slightly longer than the blue limb, which is broadly ovate with rounded outline, and nerved. Keel pilose, hardly longer than the wings, the claw and the limb of the wing of about equal length, the keel shorter than the vexillum. Filaments united more than half way, the anthers large, blue.

Espia, 3,500 feet, *O. E. White,* July 25, 1921 (*no. 608*). "Two to three feet high, the flowers dark indigo-blue."

Cracca benensis

Pubescent throughout, the hairs short and slightly ferruginous. Stems long and slender, more or less decumbent at the

base, the branches irregularly sulcate or angled. Stipules setaceous, 2 or 3 mm. long. Petioles very short or wanting, the rachis 5 or 6 cm. long, rather stout, lightly costate or angled, the leaflets mostly 6 or 7 pairs, opposite, subsessile, without stipellae, to 5 cm. long and 12 mm. wide, oblanceolate, the summit rounded, mostly slightly emarginate and minutely apiculate; entire, thickish, pale-green, the venation slender, sharply prominent on both sides, the secondaries 10 to 15 on a side, nearly straight, ascending at a sharp angle. Racemes terminating the branchlets, elongate, loosely flowered, the rachis sharply angled. Bracts about half as long as the pedicels, lance-linear, acuminate and acute. Pedicels about 3 mm. long, slender. Calyx-tube about 2 mm. long, 3 mm. broad, campanulate, about as long as the shortest tooth and two thirds as long as the longest, the teeth triangular-ovate, slenderly acuminate, rigid. Vexillum 12 mm. long, 1 cm. broad, emarginate, the claw 1 or 2 mm long, broad, the base of the limb broadly rounded or subtruncate. Wings almost equaling the vexillum, their claws adnate to that of the keel. Keel shorter than the wings, the broad summit incurved, the stigma exserted. Stamens shorter than the keel, the free portions of the filaments short and slender. Ovary elongate, tapering into the style, hirsute. Style inflexed at a right angle. Legume 4 or 5 cm. long, 4 mm. wide, linear, almost straight, the margins narrowly thickened, the persistent slender, straight style 5 or 6 mm. long. Seeds 10 to 12.

Reyes, 1,000 feet, *H. H. Rusby,* November 13, 1921 (*no. 1727*). Also at the same place (*no. 1731*) "along roadsides in wet places. Flowers blue."

No. 1312, collected in copses in the same region, may prove to be a variety of the same. Its flowers are rose-colored, the vexillum much broader. The plant is much more hairy, with the hairs more spreading. There are only 8 or 10 leaflets. The calyx teeth are larger and broader and the legume is narrower, with smaller seeds.

Meibomia microcarpa

Tomentellate, the slender ascending stems roughish, the lower leaf surfaces softly so, the branchlets more or less angled or costate. Stipules caducous, thin, brownish, shorter than the petioles, subulate, acuminate. Leaves 1-foliolate, the petioles 5 to 7 mm. long, the stipellae minute, linear. Leaflets 3 to 5 cm. long, 1.5 to 2.5 cm. broad, ovate-oblong, with rounded or subcordate base and blunt or rounded and minutely apiculate sum-

mit, entire, light-gray-green, softly hairy, especially beneath. Racemes terminal, peduncled, very slender, very laxly flowered, the flowers often two together. Bracts none or caducous, not seen. Pedicels filiform, little spreading, mostly 3 mm. long. Calyx about a third as long as the corolla, the upper and lower sepals about equal in length, the two lower united to about the middle, triangular-acuminate. Standard a little longer than the keel, obovate, the claw almost none. Keel and wing very narrow, twisted at the summit. Stamens connate for about 4/5 of their length. Style more than half as long as the ovary, inflexed so as to point partially downward. Pod 5-jointed, the sinuses intruded almost equally on both sides, the joints broadly oval or suborbicular, 2 to 3 mm. long, the seed central, the margin narrowly thickened.

Reyes, 1,000 feet, *H. H. Rusby,* October 25, 1921 (*no. 1318*).

Meibomia ovalis

Puberulent. Branches slender, erect. Stipules 4 or 5 mm. long, lance-ovate, mostly inaequilateral, obtuse or acutish. Petioles 1 to 1.5 cm. long, the leaflets 3, the lateral petiolules 1 mm. long, the rachis and petiolule of the terminal 5 or 6 mm. long Stipellae of the lateral leaflets a little longer than their petiolules, linear-attenuate, brownish, very thin, those of the terminal leaflet similar and a little longer. Leaflets oblong, or elliptical, the lateral to 4 cm. long and 1.5 cm. broad, the terminal about a half larger in all dimensions; all with rounded base and minutely apiculate summit, the margin very thinly revolute and minutely ciliate, thin; above deep-green and sparsely short-pilose, beneath very pale and sparsely pubescent, the midrib and secondaries lightly prominent beneath, the secondaries 6 to 8 on a side, strongly ascending and connecting near the margin, the venation coarsely anastomosing. Racemes terminal, solitary, long-peduncled, slender, very loosely flowered, the flowers solitary, the bracts subulate, acuminate, acute, about one fifth the length of the pedicel, which is 6 to 10 mm. long, very slender, little spreading. Two lower sepals connate only at the base, ovate, acuminate and acute, more than half as long as the corolla, the upper a little longer. Vexillum 6 mm. long and nearly as wide, the claw short and broad. Wings about 4 mm. long, the keel a little longer. Stamen-tube nearly as long as the wings, coherent almost to the minute anthers. Ovary pubescent, green, a little longer than the wings, strongly incurved. Fruit not seen.

Rurrenabaque, 1,000 feet. *H. H. Rusby,* October 15, 1921 (*no. 1285*).

Meibomia longiarticulata

Roughish-hairy, with rather coarse, divergent hairs. Stems purplish, rather stout, nerved, much-branched, the branchlets rather short, green. Stipules subulate, acuminate, acute, half the length of the petioles, thin, brown, deciduous, the stipellae similar. Leaves trifoliolate, the petiole 5 to 7 mm. long, the rachis nearly as long, the petiolules about half as long. Lateral leaflets 3 to 10 cm. long, 1 to 3.5 cm. wide, lanceolate, with rounded or blunt base and summit, the latter minutely apiculate; thickish and rigid, bright-green on both sides, all the venation slender, the secondaries about 6 or 8 on a side, strongly ascending, the venation loosely but prominently anastomosing. Inflorescence paniculate, the racemes rather densely flowered, the caducous bracts, similar to the stipules, but smaller, the flowers mostly 3 to 5, racemose on a short branchlet. Sepals 1 to 2 mm. long, ovate, obtuse, the two lower wholly connate, the others at the base only. Standard 1 cm. long, 7 to 8 mm. wide, obovate, the base regularly narrowed, without claw. Filaments distinct for about one fourth of their length. Pods (always?) 2 or 3-jointed, the sinuses equally intruded on both sides, the joints to 2 cm. long and 5 mm. wide, oblong, thin, the margin thickened, a slight indentation on one side where the seed is attached.

Covendo, 2,000 feet, *O. E. White,* September 12, 1921 (*no. 1055*).

Amerimnon ovale

Inflorescence, etc., minutely puberulent, the lower leaf-surfaces almost imperceptibly so. Branchlets short, stout, crooked. Stipules and stipellae not seen. Petioles about a fourth of the length of the leaf, mostly erect, stout. Leaflets about 7, alternate, the petiolules 5 mm. long, rather stout, flattened above. Blades to 8 cm. long and a fourth to a third as wide, oblong or oblanceolate with rounded base and slightly produced at the summit into a very short and broad, mostly retuse point, entire, thickish, drying brown, deep-green and shining above, pale beneath, the principal secondaries about 15 on each side, with as many smaller intermediate ones, the venation prominent on both surfaces, more so on the upper surface, the venation extremely finely anastomosing and of a reddish or purple color beneath. Corymbs axillary, puberulent, about 3 cm. long and broad, the peduncle about as long as the flowering portion, very slender. Flower 5 mm. long, the calyx thick, about half the length, campanulate, the lower tooth much larger than the others and about

as long as the tube, the others triangular-ovate, obtuse. Petals of the keel straight, oblanceolate, with rounded summit. All petals of nearly equal length. Wings oblong with rounded summit, slightly curved, very abruptly contracted into the very slender stipe, which is slightly more than one fourth the total length. Body of vexillum about as long as that of the wing, but the stipe only half as long as the stipe of the wing, and broader, the limb emarginate, its breadth less than half its length. Stamens unequal, a little shorter than the petals, a little longer than the style, distinct nearly to the base.

Rurrenabaque, 1,000 feet, *H. H. Rusby,* October 19, 1921 (*no. 1292*).

Machaerium foliosum

Glabrous. Branchlets rather stout, densely leafy, coarsely angled or sulcate. Stipules 1 cm. or more long, linear-attenuate, thin, finely nerved. Petiole about one third the length of the rachis, both slender. Stipellae spiniform, 1 or 2 mm. long, slender, pungent. Petioles 2 or 3 mm. long. Leaflets mostly 9 or 11, the lower smaller, from 4 to 8 cm. long, 2 to 3.5 cm. broad, oblong, or slightly obovate, with rounded base and shortly mucronate summit, obscurely dentate with minute, salient teeth, thickish, bright-green, the midrib stout and prominent beneath, the venation very slender and very finely reticulate, the secondaries about 8 on a side, widely spreading, then crookedly falcate. Panicle terminal, sessile, pyramidal, decompound, densely flowered, the inflorescence scurfy-puberulent and somewhat ferruginous. Flowers very short-pedicelled, the bractlets linear-attenuate. Calyx about 3 mm. long, and fully as broad, campanulate, the teeth very short and broad, acutish, the sinuses acute. Vexillum about 1 cm. long and broad, the claw about a fourth of its length, many-veined. Wings a little longer than the vexillum, the claw about a third of the length. Keel about equaling the wings, obtuse, lightly incurved, the claw short, the limb shortly auriculate. Vexillar stamen free. Base of ovary long-acuminate, the style long, strongly incurved. Fruit not seen.

Rurrenabaque, 1,000 feet, *H. H. Rusby,* October, 1921 (*no. 826*). "A large forest tree, with dark-blue flowers."

Machaerium rogaguense

(Fruiting specimens.) Glabrous. Much-branched, the branchlets stout, short, densely leafy, apparently unarmed. Neither

stipules nor stipellae seen. Petioles about as long as the rachis. Leaflets 5, the petiolules 2 or 3 mm. long. Blades 4 to 6 cm. long, 2 to 3 cm. wide, ovate, with regularly rounded base and very abruptly short-acuminate and obtuse summit, entire, coriaceous, deep-green, somewhat shining above, the midrib very strong beneath, the principal secondaries 8 or 10 on a side, with intermediates, the venation finely and strongly anastomosing, prominent beneath. Panicles or racemes terminal and in the upper axils, short, densely fruited. Pedicels 2 to 4 cm. long, stout. Persistent calyx about 2 mm. long, campanulate, the teeth short and broad, the stout stipe 7 or 8 mm. long. Legume 5 or 6 cm. long, 1.5 cm. broad, obliquely curved at about one fifth of its length from the base, the widest portion about a half wider than the narrowest, which is at the point of curvature, the margin narrowly and sharply thickened all around; rich-brown in color, puberulent when young, strongly reticulate-veined, the reticulation much finer at the base.

Reyes, 1,000 feet, *H. H. Rusby,* November 12, 1921 (*no. 1716*). A medium-sized tree of the pampas. Also collected as a shrub on the margin of Lake Rogagua, October 31, 1921 (*no. 1370*).

Platymiscium fragrans

(Fruiting specimens.) Finely tomentellate, the leaves minutely puberulent beneath. Branchlets slender, terete, leafy, roughened with elevated lenticels. Stipules and stipellae not seen. Leaves petiolate, the petiole shorter than the rachis, both slender, terete, the leaflets mostly 7 or 9, opposite. Petiolules 3 or 4 mm. long. Leaflets 4 to 8 cm. long, 2 to 4 cm. wide, oblong-ovate, with regularly rounded base and acute, short-aristate summit, entire, thin, bright-green, glabrous above, puberulent on the veins beneath, the midrib minutely verrucose, the secondaries 10 to 12 on a side, slender, spreading at about 45 degrees, lightly curved, the venation loosely reticulate. Racemes axillary, peduncled, short, bearing few fruits. Pedicels 1 mm. long. Persistent calyx 3 mm. long, campanulate, the triangular-ovate, acute teeth unequal, thick and rigid. Stipe of legume about 5 mm. long. Legume (immature) about 4 cm. long and half as broad, oblong or oval, nearly equilateral, with acute base and minutely apiculate summit, very thin, light-brown, puberulent, strongly reticulate-veined.

Rurrenabaque, 1,000 feet, *M. Cardenas,* January 8, 1922 (*no. 2033*). " A large tree in cultivated ground. In drying, it smells like Coca leaves."

Lonchocarpus pluvialis

(Bolivian Rain-tree.) Finely, closely, and densely gray-tomentellate throughout. Branchlets slender, terete, flexuous. Stipules not seen. Petioles about 4 cm. long, terete, ascending, somewhat shorter than the rachis. Leaflets mostly 7, opposite, the lower much smaller than the upper. Petiolules about 1 cm. long, finely grooved above. Larger blades to 1 dm. long and half as wide, oval or slightly obovate with obtuse, slightly produced base and slightly and acutely mucronate summit, entire, thin, gray-green, the terete midrib prominent beneath, the slender secondaries 12 to 15 on each side, ascending at about 45 degrees, straight except at the up-curved ends, connected by the rather crooked tertiaries. Axillary racemes pendulous, longer than the internodes, subsimple, some of the peduncles bearing 2 or 3 flowers. Racemes of the ample terminal panicles recurved. Bractlets wanting or caducous, not seen. Pedicels about 2 mm. long, articulated into small cupulate bases which persist to make the rachis nodose. Buds unopened and only partially mature, the calyx campanulate, 2 mm. long, and a little broader, shortly 5-toothed, the teeth triangular, somewhat unequal. Corolla bud 5 mm. long, oblong, obtuse. Vexillum about 8 mm. long and equally broad, deeply emarginate, the lobes with rounded summit, the base 2-auricled on each side, the basal auricles less than 1 mm. long, obtuse, the claw about as long and broad. Wings nearly as long as the vexillum, oblong with rounded summit, the auricle similar to that of the vexillum, the claw slender, nearly a third of the total length. Petals of the keel very slightly united above, separate below, a little shorter and wider than the wings, the auricle less obvious, the claw about the same. Stamens 10, monadelphous, unequal, united for two thirds of their length, about equaling the style, the anthers large, oval. Ovary densely pilose, gradually contracted into the long stout stipe, the subulate pilose style about half as long, the stigma cupulate.

On the road from Rurrenabaque to Reyes, *O. E. White,* and *H. H. Rusby,* October 22, 1921 (*no. 1302*).

The specific name is in allusion to the dropping of water, resembling rain, from numerous nests of caterpillars in the forks of the branches, an account of which has appeared in *Tropical Woods.* The species is near *L. boliviensis* Pittier.

Oxalidaceae

Lotoxalis Pseudosepium

Petioles and inflorescence very sparsely puberulent, the lower leaf-surfaces grayish with a very minute puberulence. Stems slender, branching, height unknown. Stipules very small, ovate, acute, caducous. Petioles 2 to 3 cm. long, filiform. Leaflets 3, the petiolules about 1 mm. long, the rachis 5 to 8 mm. long, the blades 2 to 2.5 cm. long and about half as wide, oval, obtuse at both ends, entire, very thin, the venation obscure, very slender, the secondaries about 8 on each side. Peduncles filiform, about as long as their petioles, mostly bifid, with 2 or more flowers on each branch, the branches subtended by minute setaceous bracts, the flowers pedicelled. Sepals 2 or 3 mm. long, lanceolate, acuminate, persistent. Corolla violet, twice the length of the calyx. Pod 5 cm. long and two thirds as broad, oval or ovoid, with broad truncate base and subtruncate summit, sharply 5- or 10-nerved, bearing the short filiform styles and stigmas. Seeds brown, oval, nearly as broad as long, obtusely triquetrous, strongly muricate, the warts obtuse, in somewhat obliquely transverse rows.

On the pampas about Lake Rogagua, 1,000 feet, *M. Cardenas,* November 1, 1921 (*no. 1393*).

Ionoxalis canaminensis

Pilose with long fine white spreading hairs, which become sparsely scattered on the scape and inflorescence, and are wanting on the upper leaf-surfaces. Tubers densely massed, ovoid, acute, 3 to 5 mm. long, the intermingled stipules mostly a little more than 1 cm. long, ovate or lance-ovate, acuminate, thin, light-brown, ciliate, bearing 3 or more strong nerves on the back. Leaves all radical, the petioles filiform, 6 to 12 cm. long. Leaflets 3, on petiolules little longer than their thickness, the largest 3 cm. long by nearly 4 cm. wide, oval, emarginate, the base very broad, somewhat rounded; thin, light-green, the venation thin, crooked, sparse, the principal secondaries 2 on each side, the upper pair incurved toward the tip of the notch. Scapes filiform, longer than the leaves, the flowers, 7 in my specimen, on very slender pedicels, which are longer than the flowers and are subtended by very short, broad, thin bracts. Calyx 5 mm. long, closely appressed, and the summit somewhat contracted, the sepals ovate, obtusish, the bright-red glands oblong, small. Corolla about 13 mm. long. Stamens about equaling the calyx, the anthers very small. Dissecting material wanting.

Canamina, 4,000 feet, *O. E. White,* July 20, 1921 (*no. 285*). "Flowers violet; common along irrigating ditches."

Erythroxylaceae

Erythroxylon opacum

(Only fruiting specimens seen.) Glabrous, the branchlets slender, terete, gray, leafy. Stipules 4 mm. long, ovate, acute, thick and rigid, bearing a dorsal awn near the summit, persistent. Petioles stout, shorter than the stipules. Blades 6 to 10 cm. long, 2 to 4 cm. broad, oval, acute at both ends, the summit produced into a short and broad point, the margin thinly revolute; thickish, dull-green, darker above, where the venation is lightly prominent, the principal secondaries 10 or 12 on a side, with shorter ones alternating, interarching at some distance from the margin, the venation loosely anastomosing. Fruiting pedicels about as long as the fruits, subtended by several minute bracts, slender, regularly thickened upward, where they are sharply angled. Calyx persistent, rotate, 3 mm. broad, usually bearing some of the persistent filaments. Sepals ovate, thick, obtusish. Fruit 8 mm. long and half as broad, ellipsoidal, sometimes bearing the persistent styles, which are about as long as the sepals.

Rurrenabaque, 1,000 feet, *O. E. White,* January 5, 1922 (*no. 2327*). "Fruit reddish-green when collected."

Erythroxylon venosum

Glabrous, much branched, the branchlets slender. Stipules 2 to 3 mm. long, subulate, acuminate and acute, thick, erect. Petioles 3 or 4 mm. long, stout, dark-red-brown, the blades 3 to 6 cm. long, 1.5 to 3 cm. wide, oval with acute or acutish base and blunt or obtusish summit, the margin thinly revolute, thick, slightly shining above, the midrib and secondaries slightly prominent beneath, the venation elevated and conspicuously reticulate above, the secondaries 6 or 8 on a side, strongly ascending, crooked, connecting about two thirds of the way from the midrib to the margin. Lateral lines about a third of the way from the midrib to the margin, obscure, wanting in most leaves, very slender, crooked, enclosing an areola which is often of a browner color than the rest of the surface. Flowers few, mostly solitary or 2 together, minutely bracted at the base, spreading or somewhat recurved. Pedicels about 3 mm. long, thickened and sharply angled above. Calyx 2 to 3 mm. wide, the sepals triangulate,

acuminate and acute, thick. Petals nearly three times the length of the calyx, ovate, obtuse, the midrib brown, much thickened, and terminating in a thick brown appendage. Petals bearing a basal scale on their inner face which is two thirds the length of the petal, bifid and somewhat pilose. Stamens 10, slightly unequal, connate at the base, the filaments slender, pilose, the anthers globoid. Ovary globoid, a little longer than the united portion of the filaments. Styles 3, filiform, somewhat tapering, longer than the stamens, the stigmas capitate.

Rurrenabaque, 1,000 feet, *H. H. Rusby,* October 7, 1921 (*no. 1564*).

MALPIGHIACEAE

Mascagnia ixiamensis

(Specimens with young and mature fruit.) Young portions and inflorescence gray-puberulent. Leaves (only the upper seen) opposite, glandless, the stipules not apparent. Petioles 1 to 2 cm. long, slender, channeled above, mostly twisted, the blades 3 to 4 cm. long, 3 to 5 cm. wide, ovate, with somewhat rounded base and short-acuminate and acute summit, entire, thin, very short-puberulent beneath, obscurely and sparsely so above, the venation lightly conspicuous beneath, the secondaries about 5 on each side, strongly ascending. Panicle terminal, lax, stoutly peduncled, 2.5 dm. long, 4 dm. broad, the branches opposite, divergent with very small ovate, concave bracts with contracted base. Calyx 8-glandular, densely gray-tomentose like the young wings, the sepals broadly triangular-ovate, mostly obtuse, little, if any, exceeding the oblong glands. Mature fruit subrotund, nearly 2 cm. broad, the wing very thin. Mature wings sparsely pilose, the dorsal only half the width of the lateral, or less, the truncate base, which does not extend below the base of the nutlet, broader than the summit.

Ixiamas, 800 feet, *M. Cardenas,* December 19, 1921 (*no. 1999*).

Mascagnia pachyptera

(Fruiting specimen.) Glabrous, except for the lightly pubescent inflorescence. Stems terete, slender, the leaves opposite, mostly glandless, occasionally one or two obscure glands in the edge of the blade near the base, the stipules not apparent. Petioles 1 to 2 cm. long, slender, narrowly grooved above, the blades 6 to 12 cm. long, 3 to 6 cm. broad, oval or slightly obovate, with obtuse or acute base and abruptly short-pointed and acute sum-

mit, entire, thin, the venation very slender, scarcely prominent, the principal secondaries about 5 on each side. Small racemes terminating short branchlets or subaxillary, the rachis nodose, the branches minutely bracted. Calyx 8-glandular, subcoriaceous. Fruit sparsely pilose, the carpels three. Wings coriaceous, the dorsal 1.5 to 2 cm. long, 4 mm. wide, extending equally below and above the nutlet, both ends rounded, the lateral 1.5 cm. long, 1 cm. wide, the base broadly rounded, extending somewhat below the nutlet, the margin sinuate, the summit projected above the nutlet and somewhat outward, the venation not prominent. Nutlet large and thick.

Rurrenabaque, 1,000 feet, *M. Cardenas,* November 24, 1921 (*no. 1163*).

Mascagnia macrophylla

Glabrous, except the minute puberulence of the inflorescence, the stems stout, terete, hollow. Stipules not apparent. Petioles 2.5 cm. to 4 cm. long, very stout, twisted, blackish-brown, narrowly grooved above, bearing a pair of oblong glands near the summit. Blades 2 to 3 dm. long, 1.5 dm. wide, ovate or oval, with rounded base and abruptly short-acuminate and acute summit, entire, thin, bright-green, somewhat shining above, the venation slender, lightly prominent on both sides, the secondaries about 10 on each side, strongly falcate toward the margin, connected by a loose reticulum. Panicles axillary, shorter than the leaves, shortly and stoutly peduncled, their branches opposite, bracteate, mostly subtended by small glands. Pedicels short and stout, 2-bracteolate near the summit, the bractlets gland-like. Calyx 10-glandular, the glands small, basal, subglobular, the sepals fleshy, erect, 2.5 mm. long and broad, with rounded summit. Petals yellow, 5 mm. long and broader, very shortly unguiculate, entire. Stamens 10, monadelphous at the base, erect, short, fleshy, all with anthers, the anthers short and very broad, the connective short, thickened, verrucose. Carpels nearly distinct, pubescent, the styles exceeding the stamens, stout, crooked, the stigma flattened, broad, spreading. Fruit 7 cm. broad, 5 cm. long, very thin, lustrous, pale-green, the wings irregularly and shallowly crenate, the principal nerves about 30 to 35, mostly forking at about two thirds of the way to the margin. Dorsal wing about 5 mm. broad, subsemicircular, extending equally above and below the nutlet.

Flowering specimen: Ixiamas, 800 feet, *M. Cardenas,* December 18, 1921 (*no. 1943*). Fruiting specimen: Rurrenabaque, 1,000 feet, *M. Cardenas,* January 26, 1922 (*no. 2044*).

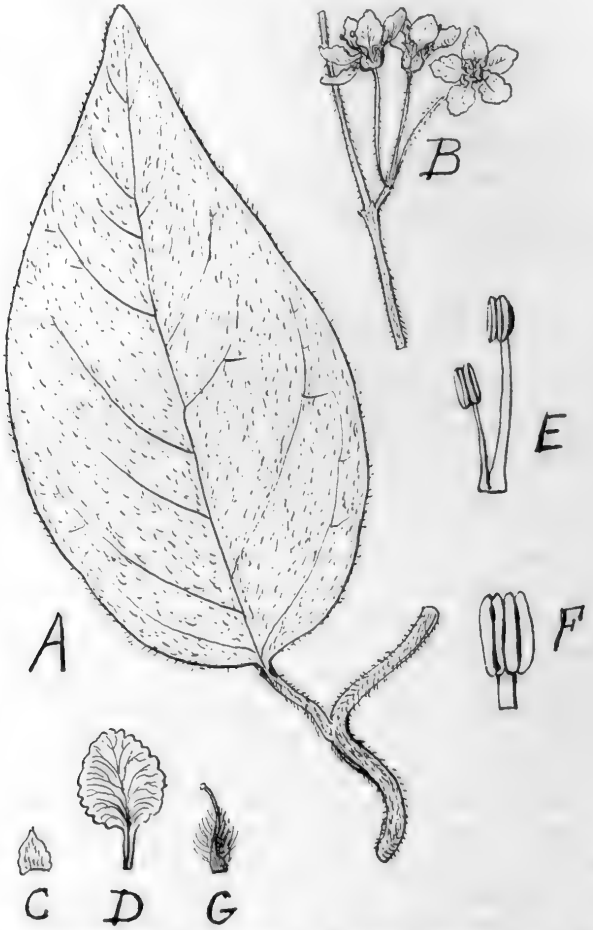

FIGURE 4. *Jubistylis mollis* Rusby. A, leaf, natural size; B, umbel, natural size; C, upper part of sepal, × 2; D, petal, × 2; E, two stamens, × 5; F, anther, × 10; G, pistil, × 2.

JUBISTYLIS gen. nov.

Calyx 5-parted, glandless. Petals unguiculate, glabrous, crenate, the base of the unguis slightly dilated. Stamens 10, all perfect, unequal, the filaments dilated at the base and slightly connate, the anthers ovate, versatile, not appendaged (?), but having a narrow translucent margin. Pistils 3, distinct, pubescent, the lower portion of the style densely long-pilose and ferruginous, the summit recurved, the stigma truncate, small, the ovary apparently without crest or appendages. Fruit not seen.

A climbing plant, with opposite, petioled, mollous foliage, a pair of glands at the summit of the petioles, on the upper side. Flowers yellow, slenderly pedicelled, in lateral, short-peduncled umbels.

Apparently related to *Hiraea,* but differing in its glandular petioles, its distinct pistils, without crests, and its peculiar anthers, which approach *Pterandra* by their thin margin, though scarcely to be called winged.

Jubistylis mollis

Softly, though not very densely pilose, with white hairs. Stems twining, brown, terete or irregularly angled. Branchlets short, slender, leafy, the younger portions pilose with coarse white divaricate or often reflexed hairs. Petioles of the larger leaves 2 cm. long, slender, densely pilose, bearing a pair of blackish glands at the summit, on the upper side. Blades to 1 dm. long and half as wide, ovate with rounded base and shortly acuminate and acutish summit, entire, thin, the upper surface dark-green with a slight gray appearance from a sparse covering of gray hairs, the lower surface densely pilose and gray, the venation slightly prominent beneath, the secondaries about 8 on each side, strongly ascending. Umbels loosely few-flowered, short-peduncled, the pedicels filiform but rigid, about 1.5 cm. long. Sepals 3 mm. long and broad, ovate, obtuse, thin, pilose, glandless. Unguis of petals longer than the sepals, stout, the lamina abrupt, 5 mm. broad and not quite so long, yellow, the margin crenate. Stamens unequal, the longest nearly twice the length of the sepals, the anthers short, ovate, obtuse. Pistils 3, densely and coarsely long-pilose, the styles about as long as the stamens.

Collected along the cataracts of the Bopi River, 3,000 feet, *H. H. Rusby,* September 6, 1921 (*no. 732*). "A large vine in the edge of the forest."

Banisteriopsis Whitei

Grayish-pubescent throughout, the bright-green upper leaf-surfaces sparsely so. Branchlets elongate, slender, terete, sparsely leafy, the leaves opposite, glandular, the stipules not apparent. Petioles 4 to 8 mm. long, very slender, the blades 2 to 4 cm. long and 1 to 2 cm. wide, ovate, with blunt or rounded base and obtuse or acutish summit, entire, thin, softly pubescent beneath and less so above, the venation inconspicuous. Flowers

umbellate, or occasionally subracemose, the umbels short-peduncled, mostly 8-flowered, the pedicels filiform, about 1 cm. long, bracted at the base and 2-bracteolate at about the middle, the bractlets very small, herbaceous. Calyx 3 mm. broad, 8-glandular. Petals yellow, 5 mm. long, obovate-spatulate, concave, entire. Stamens much shorter than the petals, unequal, the filaments subulate, connate at the base, the anthers small, whitish or pale, the connective much thickened. Styles slightly exceeding the stamens, the summits flattened, the stigmas cristate. Ovary pilose.

Espia, 3,500 feet, *O. E. White,* July 27, 1921 (*no. 429*).

Banisteria canaminensis

(Heteropterys H. B. K.) Tomentellate throughout, the stems somewhat scabrous, reddish, lightly sulcate. Leaves opposite, only the upper seen, the petioles 5 mm. long, stout, bearing 2 small black glands at the summit, the blades 5 cm. long and half as wide, oval with blunt or rounded base and lightly mucronate summit, entire, thick, subglabrous above, softly tomentellate beneath, where the venation is strongly prominent, the secondaries 4 on each side, strongly falcately ascending, connected by a loose and prominent reticulation. Panicles terminal, large, lax, ferruginous, the flowers crowded at the ends of the branchlets, the bracts small, thick, densely ferruginous. Calyx 2 mm. broad, 10-glandular, two of the glands smaller, the sepals thick, erect, equaling the filaments, oval with rounded summit, lightly denticulate. Petals 3 or 4 mm. long, shortly and stoutly unguiculate, yellow, broadly oval, nearly plane, lightly denticulate. Stamens 10, all with anthers, half the length of the petals, subequal, lightly connate at the base, the anthers lightly recurved, the connective black, dorsally thickened, the thecae white. Ovary pilose, the styles about equalling the stamens, very stout, erect, truncate. A single small fruit seen is apparently immature. The body is not appendaged, and is pilose, the wing 2 cm. long, 5 mm. broad, lightly ascending, the lower half of the inner margin shallowly excavated.

Canamina, 4,000 feet, *O. E. White,* July 21, 1921 (*no. 259*).

Banisteria Bopiana

(Heteropterys H. B. K.) (Fruiting specimen.) Pedicels etc., appressed-pilose, otherwise glabrous. Branchlets stout, leafy, the leaves opposite, glandless, the stipules not apparent.

Petioles 1 to 1.5 cm. long, very stout, strongly channeled above, the larger blades 2 dm. long, 1 dm. wide, oval and obtuse at both ends, entire, coriaceous, the venation slender, prominent beneath, the secondaries about 8 to 10 on a side, ascending, falcate, connected by a coarse reticulation. Racemes axillary, short-peduncled, few-flowered, the pedicels bracted and 2-bracteolate at the base, the bracts short, ovate, thick and coriaceous. Pedicels 1.5 to 2 cm. long, stout, striate, thickened at the summit. Calyx 8-glandular, the glands concave, the sepals triangular-ovate, thick, blackish, hirsute with brown hairs. Body of fruit 1 cm. long and more than half as broad and thick, elliptical. Dorsal wing nearly horizontal, slightly declined, unequally oblanceolate, about 4.5 cm. long, and more than 1.5 cm. broad, auriculate, the auricle about 1 cm. broad and nearly as long, with rounded end, both coriaceous and finely very many-nerved. Crest of the body double, the inner about twice as wide as the outer, both coriaceous and sinuate, and projecting slightly above the body.

In the Bopi River Valley, 3,000 feet, *H. H. Rusby,* September 12, 1921 (*no. 663*).

Banisteria sphaerandra

(Heteropterys H. B. K.) Lower leaf-surfaces and pedicels minutely sericeous-puberulent. Leaves opposite, glandless, the stipules not seen. Petioles about 7 mm. long, narrowly margined, the margins involute, sulcate beneath, like the lower portion of the midrib. Blades 1 to 1.5 dm. long, 2.5 to 4 cm. broad, regularly acuminate and acute, acutish at the base, entire, thick, lustrous above, pale and slightly sericeous beneath, the slender venation not prominent, the principal secondaries 10 or 12 on each side. Panicle large, lax, the branches opposite from a somewhat turgid node, the branches and branchlets subtended by small reduced leaves, the pedicels subtended by ovate, acuminate and acute, green, thick bracts. Pedicels stoutish, about 3 mm. long, the flowers deep-yellow. Calyx 8-glandular, the sepals nearly 3 mm. long, 2 mm. wide, ovate, blunt, thick, green, erect. Petals 7 mm. long, the claw about a fourth of this length, and nearly equally broad, concave, dentate, the teeth short-fimbriate. Filaments subulate, fleshy, monadelphous at the base, unequal, the longest equaling the styles. Anthers 8, reflexed, the oblong greenish thecae borne on the face of a large, subglobular, black, gland-like connective. Ovary black, deeply 3-lobed, lightly pubescent, the styles stout, spreading, truncate. Fruit not seen.

Dr. Gleason says "Bears a strong general resemblance to *B. Mathewsana* (A. Juss.), but in that species the calyx appears glandless."

A single specimen, Yrupana, 5,500 feet, *G. S. McCarty,* August 6, 1921 (*no. 126*).

Rutaceae

Zanthoxylum Cardenasii

(Only fruiting specimens seen.) Glabrous except a slight puberulence on the pedicels and rachis, the branchlets short and stout. Petiole and leaf-rachis slender, together 7 to 12 cm. long. Leaflets mostly 5 to 7, 6 to 10 cm. long, 2.5 to 4 cm. broad, oblong, with a very abrupt, short, obtuse point at the summit and contracted at the base into a blackish petiolule 5 to 7 cm. long, entire, thick, the secondaries 12 to 15 on a side, slender, widely spreading, lightly interarching near the margin, the midrib stout, terete, strongly prominent beneath, lightly channeled above. Panicles numerous, crowded, short, sessile, densely fruited, the blackish branchlets and pedicels short and thick. Mature carpels mostly 3, sessile by a narrowed blackish base, brown, shallowly pitted, about 5 mm. long and nearly as broad, inequilaterally obovoid with rounded summit tipped by the short and stout style-base. Seed solitary, ellipsoidal, black, smooth and strongly shining, the breadth two thirds of the length, the testa thick.

Ixiamas, 800 feet, *M. Cardenas,* December 17, 1921 (*no. 1933*). A large shrub, with red fruit, on sunny pampas.

Zanthoxylum annulatum

(Fruiting specimens.) Glabrous, the branchlets very stout, terete, gray, finely wrinkled in drying. Petiole and rachis slender, terete, ascending, 10 to 18 cm. long, sparsely and finely black-dotted. Leaflets mostly 5 or 7, thin and membranaceous, bright-green, the lower successively smaller. Petiolules 5 to 10 mm. long, channeled, finely whitish annulate and wrinkled. Blades 8 to 15 cm. long, 4 to 7 cm. wide, oval, acute or short-acuminate at the base, rounded and cuspidate at the summit, the venation very slender, lightly prominent beneath, the secondaries about 12 on a side, widely spreading and lightly and irregularly anastomosing at some distance from the margin, the reticulation obscure. Panicles lateral, sessile, short and dense, the pedicels short and thick, the 2 or 3 carpels subsessile, compressed and lightly keeled, strongly reticulate-pitted, greenish-brown, 6 mm. long, about 3 mm. wide, obovoid with rounded summit. Seed black, somewhat shining, reticulate-wrinkled.

Rurrenabaque, 1,000 feet, *H. H. Rusby,* October 6, 1921 (*no. 795*). A small tree with peculiar and agreeable fragrance.

Simarubaceae

Picramnia monninaefolia

(Fruiting specimen.) Densely and softly pubescent, except the upper leaf-surfaces, which are sparingly pubescent on the principal veins. Branches terete, slender. Leaves 1 to 2 dm. long, the petiole mostly about a sixth or less of the total length. Leaflets mostly 9 or 11, subopposite, the petiolules about 2 mm. long, the blades 3 to 7 cm. long, 1.5 to 3.5 cm. broad, the lower successively smaller, ovate, mostly rounded at the base, especially the lower ones, abruptly short-pointed and acutish, entire, thickish, but herbaceous, the slender venation little prominent on the lower surface, the secondaries about 6 on each side, slightly falcate, connecting at some distance from the margin, the remaining venation obscure. Raceme elongated slender, long-petioled, the pedicels slender, spreading or recurved, about 7 mm. long, slightly thickened upward. Fruiting calyx about 4 mm. broad, 5-parted nearly to the base, the ovate acute lobes widely spreading. Fruit about 1 cm. long and two thirds as wide, ellipsoid, black, glabrous or sparingly pubescent, bearing two short style-bases.

A single specimen probably collected near Canamina, but collection data wanting (*no. 434 A*). Species near *P. Spruceana*.

Burseraceae

Icica rhynchophylla

Glabrous, the branchlets slender, lightly sulcate. Petioles 7 cm. or more long, the rachis about twice as long, slender, terete. Leaflets mostly 7, the lowermost about half the size of the uppermost, the slender petiolules about 3 cm. long, the upper portion winged by an involute extension of the blade about 5 mm. long. Blades of the leaflets 10 to 20 cm. long, 4 to 8 cm. broad, oval, obtusish at both ends, bearing a very abrupt narrow appendage about one seventh of the length of the blade, which is entire, thin and dark-green, the slender venation lightly prominent above, sharply so beneath, the secondaries about 12 on each side, widely spreading, the outer ends abruptly up-curved, and connecting near the margin, their branches meeting midway at a broad angle, the venation loosely anastomosing. Spikes loosely paniculately branched, shortly pedunculate, about half the length of their leaves, mostly loosely flowered. Flowers 5-merous, the buds immature in my specimen. Fruit ovoid, 2 cm. long and

nearly as broad, slightly concave at the base, acute with the short style-base.

A small forest tree at Rurrenabaque, 1,000 feet. Collected in flower, *H. H. Rusby,* October 8, 1921 (*no. 1592*). The fruiting specimens, which have smaller leaves, were collected under the number *1152.*

MELIACEAE

Guarea membranacea

Glabrous, excepting a very minute puberulence on the flowers. Branchlets very slender, reddish-brown, finely nerved. Petioles to 4 cm. long in my specimen, slender, narrowly grooved, the rachis to 10 cm. Leaflets 1 to 3 pairs, the petiolules 5 to 8 mm. long, the terminal leaflets to 2 dm. long, 7 cm. wide, oval to obovate, very abruptly contracted into a short, obtuse acumination, thin, pale-green, the slender venation slightly prominent beneath, the secondaries 8 or 9 on each side, very slender, widely spreading, lightly falcate at the summit. Lower leaflets similar, but much smaller. Panicles branched from the base or on long slender peduncles, very lax and sparsely flowered. Flowers unopened in my specimen. Mature buds on pedicels 2 mm. long, which are sharply angled, with or without minute bractlets at or above the base. Calyx broadly campanulate, 2 to 3 mm. wide, the margin irregularly and very shallowly lobed, the calyx deep purple-brown, thick, grayish-puberulent. Corolla-bud about 7 mm. long, obovoid with rounded summit. Stamen-tube 6 mm. long, almost equaling the petals, the margin very shallowly 10-crenate. Anthers sessile, 1.5 mm. long, reaching the summit of the tube. Ovary 3 mm. long, nearly cylindric, 5-angled, the stout style a little shorter, the stigma more than 1 mm. broad.

Rurrenabaque, 1,000 feet, *Martin Cardenas,* November 25, 1921 (*no. 1171*). "A large tree in forest, the flowers pure white." Species near *G. Kunthii.*

GUAREA BANGII Rusby, Bull. Torrey Club **49**: 262. 1922. (*Nos. 779, 1590, 2178.*)

GUAREA ALBOROSEA Rusby, Bull. Torrey Club **49**: 263. 1922. (*No. 797.*) This appears to be *G. pendulispica* DC.

Trichilia Cardenasii

Glabrous, but the slender branchlets roughened with minute whitish papillae. Branchlets slender, gray-brown, finely

wrinkled. Petioles short, stout, bearing a gland on the upper surface about midway. Leaflets mostly 5, alternate, much larger on the fruiting branchlets than on those in flower, the latter on slender petiolules 5 to 10 mm. long, channeled above. Blades to 6 by 15 cm., oblanceolate to obovate, with acute base, the summit contracted very abruptly into an acute point about 7 mm. long; thickish and rigid, entire, deep-green, drying brownish, the venation very slender, lightly prominent beneath, the secondaries about 18 or 20 on each side, widely spreading, lightly curved, connecting near the margin. Panicles axillary, peduncled, small, loosely branched and loosely flowered, the flowers very small, sessile or on very short stout pedicels. Calyx crateriform, about 2 mm. broad, the sepals ovate with broad obtuse summit, about as broad as long. Petals puberulent, 3.5 mm. long, ovate, obtuse, the summit recurved. Stamen-tube half the length of the petals, its summit bearing 10 setaceous awns about half as long as the tube, the anthers lanceolate, half as long as the tube. Fruit (apparently immature) 8 mm. broad, 6 mm. long, obscurely triquetrous and lightly grooved, with broad summit.

San Buena Ventura, 1,000 feet, *M. Cardenas,* November 26, 1921 (*no. 1856*). "A large forest-tree."

Trichilia pauciflora

Grayish-puberulent. Petioles 5 cm. long, slender, the upper surface plane or shallowly channeled, the rachis 6 or 7 cm. long, the leaflets 5 in all my specimens, subopposite, on petiolules 2 to 5 mm. long. Blades 5 to 15 cm. long, 3 to 9 cm. wide, the lower successively smaller, the terminal much the largest, oval or slightly obovate, with obtusish (the terminal acute) base and very abruptly, shortly and obtusely pointed, entire, thin, pale-green, subglabrous above, puberulent, mostly on the veins, beneath, where the midrib and secondaries are sharply prominent, the latter 10 to 15 on a side, alternate, widely spreading and falcately connecting close to the margin. Panicles (in fruit) axillary, 5 cm. or less long, including the peduncles, densely fruited. Pedicels extremely short. Capsules 1 cm. long, ovoid, tomentose, the three valves stoutly keeled within. Seed solitary, nearly filling the cavity, blackish, smooth and slighty shining, subglobose, enclosed in a thin reddish aril.

San Buena Ventura, 1,000 feet, *Martin Cardenas,* December 1, 1924 (*no. 1743*). "A large tree in the river-margin." So far as my specimens indicate, the species is peculiar in its one-seeded capsules. The species is near *T. viridis* Rusby.

Euphorbiaceae

Phyllanthus pseudo-nobilis

(Section Cicca.) (Staminate plant.) Glabrous, the branchlets numerous, short, spreading, floriferous except at the summit, where they bear young developing leaves. Stipules 2 mm. long, narrow, regularly acuminate from the base, thin. Young leaves 2 to 6 cm. long, oblanceolate, shortly acuminate at both ends, minutely cuspidate, tapering into a short petiole, entire, the secondaries 8 to 10 on each side and strongly falcate-ascending, the venation finely anastomosing. Umbels clothing the branchlets, many-flowered, the pedicels densely clothed at the base with minute white scales, filiform, unequal, some nearly 1 cm. long, the fully expanded flowers nearly 2 mm. wide. Sepals 4, oval, blunt, two of them wider, slightly connate at the base. Stamens four, distinct, slightly exceeding the sepals, the filaments stout, the anthers subglobular.

Rurrenabaque, 1,000 feet, *H. H. Rusby,* October 6, 1921 (*no. 793*). Species closely resembling those forms with loose inflorescence which have been referred to *P. nobilis,* but which appear distinct therefrom. This species, however, is distinct, as to both leaves and flowers.

Phyllanthus ibonensis

(Section Cicca.) (Pistillate plant.) Glabrous, the branchlets slender, leafy, thickly covered with small, whitish, elevated lenticels. Petioles 3 to 5 mm. long, stout, blackish, the margins strongly incurved. Blades 5 to 10 mm. long, 2 to 4 cm. wide, sometimes inaequilateral, lanceolate, regularly acuminate and acute, subcordate, entire, thickish, the midrib and secondaries slightly prominent beneath, the secondaries 6 to 8 on a side, strongly falcate-ascending, the venation loosely and lightly reticulate. Racemes several, crowded on reduced nodiform branchlets, unequal, less than 1 cm. long, flexuous, loosely several-flowered, the bracts subulate. Pedicels filiform, 2 or 3 mm. long, slightly thickened upward. Flower 1 to 1.5 mm. long and broad, campanulate. Sepals 5, somewhat connate at the base, thickish, the summits lightly recurved, oblong, obtuse. Ovary ovoid, shorter than the 3 stout, separate, subulate recurved styles, which slightly exceed the perigone. Fruit (mature ?) 3 mm. long, shortly and broadly ovoid or obovoid, the base loosely invested by the persistent calyx.

On the shore of the Ibon River, 800 feet, *M. Cardenas,* February, 1922 (*no. 2085*). "A small tree with red berries." Species near *P. nobilis,* but differs in the racemose inflorescence, the far more numerous flowers on a flexuous raceme, and with prominent elongate bracts.

Phyllanthus biflorus

Glabrous, the stems erect, very slender, 1 to 3 dm. high, simple or sparingly branched. Petioles very short, the blades 7 to 15 mm. long, 4 to 8 mm. wide, oval, nearly elliptic, some slightly inaequilateral, thickish, entire, the venation slender and inconspicuous, the secondaries mostly 4 on each side. Flowers (always ?) 2 in each axil, one staminate, the other pistillate, the latter with a slightly shorter pedicel.

Staminate flower: Pedicel short, recurved. Perigone 6-parted, the segments subequal, nearly 2 mm. long, narrowly oblong with rounded summit, white with broad green middle band. Stamens 6, about half as long as the perigone, connate for about half their length.

Pistillate flower: Perigone-segments little more than half the size of those of the staminate flower, and relatively broader. Ovary subglobose, the styles connate at the base, bifid, recurved. Capsule 1.5 mm. long and broad, green, shining. Seeds light-brown.

Along the Bopi River, 3,000 feet, *H. H. Rusby,* September 12, 1921 (*no. 662, type*). Also near Rurrenabaque, 1,000 feet, *M. Cardenas,* December 1, 1921 (*no. 1746;* this form about 3 dm. high).

Phyllanthus ichthyomethius

Subglabrous, the stems roughly nodose from the fallen branchlets, flexuous, densely branched, the branches slender, more or less angled or sulcate, densely leafy. Petioles 1 or 2 mm. long, very slender, minutely puberulent. Blade 1 to 3 cm. long, 5 to 15 mm. wide, ovate, often slightly inequilateral, with blunt base and mostly obtuse summit, entire, thin, bright-green, the venation sparse and very slender. Fascicles many-flowered, the filiform pedicels sometimes more than 1 cm. long. Only staminate flowers found, the perigone 6-parted nearly to the base, the segments nearly 2 mm. long, oblong, the outer three somewhat broader than the inner. Stamens 6, not quite half the

length of the perigone, the filaments connate at the base, the anthers minute.

Near Rurrenabaque, 1,000 feet, *O. E. White,* October 8, 1921 (*no. 886*). "A shrub, to 10 feet high, with greenish-white flowers. Leaves used as a fish poison, and said to be the strongest of three varieties there used. Often planted in door-yards."

Phyllanthus prunifolius

(Fruiting specimens.) Glabrous. Branchlets elongate, slender. Petioles 2 mm. long. Blades to 8 cm. long by 3 cm. wide, lanceolate with rounded base and acuminate acute or acutish summit, entire, or obsoletely serrate-dentate, thick, the slender venation sharply prominent beneath, the secondaries 6 or 8 on each side, strongly ascending, crooked and irregular, connected by few crooked tertiaries, the finer venation coarsely and strongly anastomosing. Racemes sessile, mostly 2 or 3 together in the axils or along the nodes of naked branchlets, flexuous, several-flowered, bearing persistent small subulate bracts. Fruiting pedicels 2 or 3 mm. long, filiform, the persistent calyx spreading or reflexed, deeply 6-parted, 2.5 to 3 mm. broad, the divisions white, membranaceous, oblanceolate, obtuse. Berry red, 3 mm. long and nearly as broad, obovoid, triquetrous, the summit depressed in the center, the persistent styles 3, distinct, filiform, somewhat recurved, 1 mm. long.

On the River Ibon, 800 feet, *M. Cardenas,* February 15, 1922 (*no. 2085*). "A small shrub, with red berries."

Croton flavispicatus

(Section Decarinium.) More or less scabrous throughout, with very short stellate hairs. Stems rather stout, coarsely angled or sulcate, light-gray. Leaves alternate, both petioles and blades very unequal. Petioles to 3 cm. or more long, rather stout, channeled, the glands at the summit small, narrow, black. Blades to 1 dm. long and half or more as wide, ovate with rounded or slightly cordate, often inequilateral base, and acuminate and acute summit, entire, yellowish-green and scabrous above, whitish and slightly scabrous beneath, the principal veins lightly impressed above, strong and prominent beneath; obscurely 5-nerved, the secondaries 6 or 8 on each side, ascending at about 45°, connected by crooked tertiaries. Some spikes appearing axillary, but really terminating undeveloped branches.

Spikes 2 to 4 cm. long, often 1 cm. broad, conic, obtuse, yellowish, densely flowered. Bracts about 1 cm. long, narrowly subulate or nearly setaceous, thick, acute.

Male flowers: (Only buds seen.) Pedicels short, slender. One calyx-lobe wanting or minute, the fourth smaller than the other three, which are broadly ovate, thick. Open flowers not seen. Stamens 10, the filaments in the bud 1.5 to 2 mm. long, dark-brown, slender, pilose, a little longer than the anthers.

Female flowers: Several at the base of the spike, sessile. Calyx-lobes 3, sometimes with vestiges of the other two, about 4 mm. long and more than half as wide, green with a broad yellow middle portion, thick and rigid. Ovary broader than long, about 2 mm. broad, densely hairy. Styles densely hairy, nearly 4 mm. long, deeply bifid, the summit incurved. Capsule globose, about 4 mm. long.

Ixiamas, 800 feet, *M. Cardenas,* December 20, 1921 (*no. 2026*).

Croton Buchtienii

Rough grey-hairy throughout. Herbaceous, the stems stout, the branches slender, suberect, flexuous. Petioles 3 to 5 mm. long, thick. Blades 1.5 to 3 cm. long, 1 to 1.5 cm. broad, ovate with rounded base and acute or obtuse summit, coarsely serrate-dentate, deep-green above, gray beneath, subtrinerved, the venation very stout and prominent beneath. Inflorescence too young for description, but taken, as given below, from specimens collected by Buchtien.

Near Reyes, 1,000 feet, *H. H. Rusby,* October 26, 1921 (*no. 1332*).

Otto Buchtien's *no. 1362,* collected at San Gabriel, Mapiri, 750 meters, August, 1907, distributed as "*C. chamaedraefolium* Griseb.," is evidently the same and yields the following characters:

Flowers (unopened in my specimen) borne in a short, few-flowered flexuous raceme, partly concealed among the upper leaves, the pedicels short, subtended by subulate bracts about as long as themselves. Fruiting sepals linear, distinct, unequal, shorter than the capsule, which is about 3 mm. long and broad, light-brown, shortly stellate-hairy, lightly 3-lobed.

Acalypha Douilleana

Young portions, petioles, etc., minutely gray-puberulent. Branchlets slender, leafy. Stipules 5 to 7 mm. long, setaceous. Petioles 2 to 8 cm. long, very slender, narrowly grooved above. Blades 10 to 12 cm. long, 3 to 6 cm. broad, ovate, with rounded base and abruptly and acutely acuminate summit, lightly serrate-dentate, very thin, bright-green, the venation very slender, not prominent, the secondaries about 6 on each side, including the basal pair of nerves, strongly falcate-ascending, connected by numerous straightish tertiaries. Terminal spike pistillate, sessile but interrupted at the base, densely flowered elsewhere, about 7 or 8 mm. thick, purple with the numerous stigmas. Staminate spikes solitary in the axils, very small, with or without a basal pistillate flower. Bracts of the pistillate flower green, about 4 mm. long, divided nearly to the base into 7 to 9 narrowly linear pilose lobes, the outer of which are successively shorter. Ovary spheric, about 1 mm. in diameter, minutely muricate. Stigmas purple, distinct, 7 or 8 mm. long, bearing a few linear lobes. Staminate flowers undeveloped.

Canamina, 4,000 feet, *H. H. Rusby,* July 15, 1921 (*no. 74*). "A shrub, 4 feet high, in rich shaded soil in edge of forest." Species dedicated to Mr. A. Douille, the generous manager of the Canamina plantation, to whose kind assistance the party owes much of its success.

Acalypha variegata

Softly pubescent with gray hairs, those of the stem more or less retrorse or divaricate. Monœcious, the pistillate spike terminal, the staminate solitary in the axils. All parts of the plant extremely variable in size. Stems rather stout, lightly angled. Stipules 5 to 8 mm. long, subulate and attenuate. Petioles to 4 or 5 cm. long, stout, flattened or grooved on the upper surface. Blades to 1 dm. or more long, and 5 or 6 cm. wide, ovate with subrotund base and abruptly acuminate and acute summit, serrate, rather thin, purplish, especially when young, densely and softly gray-hairy beneath, rough-hairy on the principal veins above. Venation slender, but appearing stout beneath by their dense hairiness, the secondaries 8 or 9 on each side, strongly falcate, loosely connected by the tertiaries. Staminate spikes immature, 1 or 2 cm. long. Pistillate spike solitary, shortly and stoutly peduncled, 8 to 10 mm. wide, dense. Petioles of the bracts 1 to 1.5 mm. long, the bract concave, the inner side short and toothed, the outer side about 11-parted, the segments narrowly subulate,

the terminal more than 2 mm. long, the lower successively shortened, all acuminate and acute, gray-hairy. Calyx white, densely pilose, broader than long. Stigmas exceeding the bracts, stout, recurved, pinnately many-parted, bright purple.

At Canamina, 4,000 feet, *O. E. White,* July 30, 1921, without number. "10 to 15 feet high, the juice milky." Species very near *A. Douilleana.* Named in allusion to the strong contrast, in the spike, between the purple stigmas and white calyx.

Acalypha vermifera

Young portions minutely downy. Stems much branched, the branchlets elongate, slender. Stipules 3 to 5 mm. long, subulate, consisting chiefly of a long awn-like attenuation. Petioles 2 to 5 mm. long, very slender. Blades 3 to 7 cm. long, 1 to 2 cm. broad, lanceolate, with rounded base and acuminate and acute summit, sharply short-serrate, thin, deep-green, the slender venation very prominent on the lower surface, the secondaries about 5 on each side, strongly ascending, the reticulation very loose. Spikes numerous, 1 to 2.5 cm. long, 1 mm. thick, subsessile, the pistillate flower solitary at the base, the stigmas plumose and about as long as the calyx.

Huachi, 1,800 feet, *O. E. White,* September 2, 1921 (*no. 944*). *No. 6688,* collected by the author at the same place, September 22, "a small tree in cultivated ground," appears to be the same, although the spikes are much smaller and closely sessile. Name in allusion to the caterpillar-like appearance of the inflorescence.

Acalypha heteromorpha

(Pistillate plant.) Petioles, etc., minutely papillose, the upper leaf-surfaces sparsely short-strigose, the lower sparsely puberulent. Stems stout, green, irregularly sulcate. Petioles 1.5 to 2 dm. long, strongly sulcate. Blades 12 to 18 cm. long, and nearly as broad, ovate with subtruncate or slightly cordate base and a short acutish terminal point, shortly serrate-dentate, with obtuse teeth, very thin, deep-green, all the venation slender, prominent on the lower surface, the secondaries about 12 on each side, including a nerve-like pair from the base, connected by few straightish tertiaries, all branches connecting to form a strong line close to the margin. Spikes slender, subsessile, solitary in the axils, much shorter than the petioles, the pistillate flowers all of one form or of two forms in the same spike, those

with short stigmas at the base. Bracts of the flowers having long stigmas bright-green, thin, semicircular or reniform, 3 mm. broad, flabellately nerved, lacerate-dentate, the teeth ending in a long seta. Ovary small, subglobose, pilose, the stigmas red, more than 1 cm. long, much-divided and pilose. Bracts of the flowers with short stigmas similar but broader. Stigmas similar but small, shorter than the calyx. Staminate plant not seen.

Rurrenabaque, 1,000 feet, *Martin Cardenas,* October 7, 1921 (*no. 1554*). "A tall shrub." Also collected by the author at the same place, October 4, 1921 (*no. 782*). This specimen bears no flowers with long stigmas, as does *no. 1554,* but it has a single spike of staminate flowers, about 5 cm. long and 2 or 3 mm. wide, rather densely flowered.

Acalypha bopiana

Shortly and densely gray-tomentellate throughout. Stems much-branched, the branches short, rather stout, terete. Stipules 5 or 6 mm. long, subulate with attenuate summit, reddish, pilose. Petioles 2 to 6 cm. long, terete. Blades 1 to 2 dm. long, 4 to 8 cm. wide, lanceolate, with rotund or subcordate base and short-acuminate and acute summit, finely and very lightly crenate-dentate, thin, grayish-green, the slender venation prominent beneath, the secondaries 10 or 12 on a side, in addition to 2 pairs of short basal nerves, regularly falcate-ascending, not interconnecting at the margin, connected by numerous tertiaries. Staminate spikes axillary, shorter than their leaves, sessile, slender and curving, about 2 mm. thick, densely flowered. Pistillate spike terminal, sessile, densely flowered, about 1 cm. broad. Bracts of the pistillate flowers about 6 mm. long and somewhat wider, the summit incisely dentate, the teeth attenuate, the middle one longer than the other, the edges connate at the base around the flower. Sepals 5, hyaline, pubescent, ovate, long-acuminate, about as long as the ovary, which is pubescent, broader than long, strongly lobed, the styles many times longer than the ovary, distinct almost to the base, sparingly plumose.

Cataracts of the Bopi River, 3,000 feet, *H. H. Rusby,* September 3, 1921 (*no. 478*). "A large shrub on the river-bank."

Dalechampia albibracteosa

Softly short-puberulent. Stems slender, elongate, finely striate. Stipules about 5 mm. long, lanceolate, acuminate, inequi-

lateral. Petioles 2 to 6 cm. long, slender, terete, 2-ligulate at the summit on the upper side, the ligules linear, thickish, red. Leaves 5 to 10 cm. long and broad, cordate with broad rounded sinus, deeply 3- to 5-lobed, the sinuses acutish, the segments lance-ovate, acute, obscurely serrate-dentate, thin, puberulent beneath, sparsely so above, the venation slender, crooked, loosely reticulate. Racemes few-flowered, short-peduncled. Pistillate flowers usually 2 or 3, subtended by four bracts, which are about 1 cm. long and nearly as wide, ovate, acutish, strongly 3- to 5-nerved, thickish. Sepals 12, pinnatifid, the linear segments lacerate, greatly enlaring in fruit. Style very stout, sigmoid-curved, the stigma discoid, strongly oblique, nearly circular, coriaceous, the margin recurved, nearly 2 mm. broad. Staminate flower consisting of about 20 stamens which are nearly distinct. Capsule 1.5 cm. broad, nearly 1 cm. high, deeply 3-lobed, black and shining, partly concealed by the pinnate sepals.

Rurrenabaque, *Martin Cardenas,* November 24, 1921 (*no. 1793*). "A vine, growing in forest shade, the bracts white, the stigmas red."

Pera elliptica

Glabrous. Branchlets stout, leafy, roughened with the scars of the fallen leaves. Stipules about 5 mm. long, broadly ovate, obtuse or obtusish. Petioles 3 to 5 cm. long, slender. Blades 7 to 15 cm. long, 3 to 9 cm. wide, elliptic, the base slightly cordate and sometimes a little oblique; entire, coriaceous, the midrib stout, prominent beneath, the rest of the venation slender, lightly prominent on both surfaces, the secondaries 20 to 25 on each side, with some intermediate minor ones, somewhat decurrent on the midrib, widely spreading, the outer portions ascending, connected by crooked tertiaries, the venation strongly and rather loosely anastomosing. Flowers not seen. Fruits sessile, 1 cm. to 1.5 cm. broad, and not quite so long, lightly 3-lobed, the lobes lightly grooved, tipped by the subsessile discoid stigma, the surface dark-brown, more or less papillose.

San Buena Ventura, 1,000 feet, *M. Cardenas* (*no. 1781*). Local name "Caout-chouc."

Mabea elegans

Ferruginous-tomentellate. Branchlets slender, terete. Stipules 5 to 8 mm. long, linear, mostly obtuse. Petioles 5 mm. long, stout. Blades 5 to 8 cm. long, 2 to 3 cm. wide, lance-oblong, with

rounded base and acutely mucronate summit, thickish, the upper surface nearly glabrous, with the midrib and secondaries often slightly impressed, prominent beneath, the secondaries about 12 on each side, connecting at some distance from the margin, their branches loosely reticulate along the margin. Racemes peduncled in the upper axils, sometimes branched. Bracts of the staminate flowers half as long as the pedicels, ovate, obtuse, thick, bearing two large oblong glands on the margin, about the middle. Pedicel stout, nearly 5 mm. long. Unexpanded flower depressed globose, nearly 2 mm. broad. Stamens numerous, small, connate for about half their length. Bracts of the pistillate flowers lance-linear, acuminate. Fruiting pedicel enlarged upward, recurved, the persistent sepals ovate, obtuse, 2-glandular like the bracts of the staminate flowers. Capsule subglobose.

On the Rio Ibon, 500 feet, February 18, 1922 (*no. 2379*). "Flowers greenish-yellow, a single pistillate flower at the base of each raceme."

Celastraceae

Maytenus meguillensis

Glabrous, the branchlets short and rather stout, terete, the leaves alternate. Petioles 5 to 10 mm. long, broad, cartilaginous, mostly twisted in drying, the margins strongly up-curved. Blades 6 to 10 cm. long, 3 to 6 cm. broad, oval, with subrotund base and obtuse summit, entire or very obscurely sinuate-dentate, the slender venation slightly prominent above, strongly so beneath, the secondaries 10 to 15 on a side, with intermediate smaller ones, abruptly ascending at the base, then spreading widely, and again strongly ascending to connect at some distance from the margin, the intervening venation loosely anastomosing. Cymes compound, peduncled, short and broad, little exceeding the petioles, densely flowered, the bracts very short and broad, the flowers on extremely short, stout, angled pedicels, the flowers 6 to 7 mm. broad when fully expanded. Calyx-lobes very thick, broader than long, with broadly rounded summit, less than half the length of the petals, which are 2.5 mm. long and nearly as broad, the base truncate, the summit rounded, the margin faintly denticulate. Stamens about half as long as the petals, recurved, the anthers short and broad. Disk plane, 3 mm. broad, thick and fleshy, 5-grooved and lightly lobed. Stigma sessile, capitate, depressed.

On the Meguilla River, 3,500 feet, *H. H. Rusby,* August 14, 1921 (*no. 307*). The same collected in the same locality, *O. E.*

White, July 29, 1921 (*no. 434*). A large tree with yellowish-green flowers.

Maytenus Cardenasii

(Mature fruiting specimens.) Glabrous, the branchlets slender, gray or purplish-gray. Leaves 4 to 9 cm. long, 1 to 2.5 cm. wide, lance-oblong, abruptly contracted into a short, obtuse acumination at the summit, very abruptly contracted into a petiole-like base 2 or 3 mm. long, with incurved or involute margins; upper portion of the margin obsoletely serrate; coriaceous, deep-green, slightly shining above, the venation scarcely prominent on either side, the strongly ascending secondaries 12 to 15 pairs, often with a few smaller ones alternating at the basal portion. Fruits solitary or 2 or 3 together in the axils, the pedicels 2 or 3 mm. long, stout, purplish, the persistent thickish calyx 2 mm. broad, shallowly lobed, the fruit 8 to 10 mm. long, and more than half as broad, ellipsoid, deep-purple, the aril light-reddish.

San Rafael, near Reyes, 1,000 feet, *M. Cardenas,* October 29, 1921 (*no. 1379*). Species near *M. erythrocarpa.*

Maytenus erythrocarpa

(Fruiting specimen.) Glabrous, the branchlets gray, slender, somewhat flexuous, subterete. Leaves alternate, the reddish petioles about 6 mm. long, broad. Blades 6 to 10 cm. long, 3 to 5 cm. wide, oblong or oval, with obtuse base and abruptly short-pointed obtuse summit, shallowly serrate-dentate, gradually becoming entire toward the base, thick and coriaceous, very pale-green, the venation very slightly prominent beneath, the very slender, crooked secondaries about 15 to 20 pairs. Cymes terminal, shortly peduncled, bearing 4 to 8 mature fruits. Pedicels about 5 mm. long, stout, somewhat scurfy, dark-brown. Unopened fruit broadly oval or subglobose, about 1 cm. long, brownish-red, dehiscing nearly to the base, the thick valves spreading widely and displaying a two-lobed aril of the same color that completely conceals the blackish, compressed seed. The fruit is yellow before being dried.

Near Rurrenabaque, 1,000 feet, *Martin Cardenas,* December 1, 1921 (*no. 1737*). A small tree of the forest.

Hippocrateaceae

Salacia arborescens

(Anthodon.) Glabrous, the branchlets slender, terete, or the upper portions of the internode lightly ribbed, the leaves oppo-

site. Petioles 1 to 1.5 cm. long, stout, margined, the margins upcurved. Blades 1 to 1.5 dm. long, 4 to 8 cm. broad, ovate with rounded or obtuse base and obtuse or obtusish summit, shallowly and obtusely sinuate-dentate, thickish, the slender venation very lightly prominent on both sides, the secondaries about 8 on a side, strongly ascending, connected by straightish veins. Cymes compound, at length recurved, little longer than the petioles, peduncled, densely flowered, the bracts and bractlets broader than long, mostly obtuse, the flowers sessile or subsessile, 2 or 3 mm. broad. Sepals about half the length of the petals, broader than long, the summit rounded. Petals oval or subrotund, with rounded summit. Disk crateriform, lightly sinuate. Stamens 3, about twice the length of the disk, or more, erect, extrorsely dehiscent. Stigma sessile, three-parted.

Bopi River Valley, 3,000 feet, *H. H. Rusby,* September 2, 1921 (*no. 562*). A large tree on the river-bank.

Sapindaceae

Paullinia ingaefolia

Inflorescence and flowers ferruginous or gray-tomentellate, the branches stout, irregularly and heavily angled and sulcate. Leaves extremely variable in size, the longest more than 3 or 4 dm. long, sessile or with a long, winged petiole, the leaflets 5, the joints of the rachis broadly winged, the wings herbaceous, successively wider upward and wider toward their upper part, the widest as much as 1.5 cm. on each side. Leaflets sessile, blackish glandular at the base, the largest 1.5 dm. long, and 8 cm. wide, oblong or oval, rounded or obtuse at both ends, entire or with one or two obscure teeth toward the summit, thickish, the midrib and 8 to 10 secondaries on each side mostly depressed above and strongly prominent beneath, glabrous above, sparsely and coarsely pilose on the veins beneath, finely and strongly reticulate-veined. Panicles spiciform, cylindric, densely flowered, sessile, 5 to 8 cm. long in my specimens, 1 to 1.5 cm. thick, subtended by a pair of coriaceous, ciliate, brown, many-ribbed oblanceolate obtuse bracts about 2 cm. long, these apparently substituting the tendrils, which are not present.

Rurrenabaque, 1,000 feet, *O. E. White,* October 15, 1921 (*no. 1275*).

Paullinia pendulifolia

Younger portions and inflorescence finely or sparsely puberulent, the branchlets and branches of the inflorescence strongly

ascending, often recurved toward the summit, strongly sulcate, deep-purple. Petioles 1 to 2 cm. long, 2 or 3 times as long as the rachis and, like it, narrowly winged, with the wing puberulent and involute on drying, the leaflets 5, sessile, more or less pendulous, the four lateral subequal, the terminal a little larger, from 2.5 to 5 cm. long, 1.5 to 3 cm. wide, oval with rounded base (the terminal acutish), and obtusish summit, all nearly equilateral, with 3 strong obtuse teeth above the middle, thick, glabrous and sublucid, the midrib and secondaries impressed above, strongly prominent beneath, the latter about 8 on a side, stout, ascending, rather crooked, the intervening venation densely and strongly anastomosing. Panicles racemiform, 1 to 1.5 dm. long, including the peduncle, not more than 1 cm. broad, densely flowered, the branchlets mostly 2- to 4-flowered, the pedicels very short, slender, the bracts setaceous, much longer than the pedicels, the flowers, as pressed, 5 to 7 mm. broad. Fruit about 18 mm. long, including the stipe, which is nearly a third of the length, 1 cm. broad, pyriform, very shortly and stoutly mucronate, and bearing a short connate style-base, the cells empty in all my specimens.

On the pampas near Lake Rogagua, 1,000 feet, *H. H. Rusby,* November 4. 1921 (*no. 1622*).

Paullinia quercifolia

Glabrous, the branchlets elongate, slender, heavily sulcate. Leaves normally 5-foliolate, but the lowest pair of leaflets frequently wanting and represented by a pair of blackish glandular depressions. Petioles below these glands or leaflets 8 to 12 cm. long, not margined, 5- to 7-costate. Rachis 5 to 7 cm. long, similar to the petiole. Leaflets short-petioled, the lateral all subequal, 12 to 20 cm. long, 6 to 8 cm. broad, oblanceolate, with short-acuminate base and very short obtuse terminal point, shallowly and irregularly sinuate above the middle, thickish, lucid, the midrib and secondaries lightly prominent above, sharply so beneath, the latter about 12 on a side, slender, ascending at about 45 degrees, straightish, abruptly upcurved at the end, to connect 3 or 4 mm. from the margin, the finer venation loosely reticulate. Tendrils wanting. Panicles racemiform, sessile or subsessile, about 1 dm. long, 1.5 cm. broad, the subtending bracts mostly linear, ribbed, densely flowered, the branches mostly 5- to 7-flowered, the bractlets minute, subulate, the flowers slenderly pedicelled, the pedicels about as long as the flowers, recurved, the flowers 2 mm. wide.

On the Rio Ibon, 800 feet, *Martin Cardenas,* February 15, 1922 (*no. 2080*). "An erect shrub, about a meter high, in forest shade, the flowers white." The species is peculiar in its erect habit and its tendency to trifoliolate leaves.

Paullinia ribesiaecarpa

Branchlets and inflorescence sparsely and very minutely gray-puberulent, the branchlets slender, irregularly sulcate. Petioles about 5 cm. long, more than twice the length of the rachis, slender, lightly sulcate and angled. Leaflets 5, the petiolules 3 to 5 mm. long, the blades 4 to 8 cm. long, 1.5 to 3 cm. broad, slightly inequilateral, lance-oblong, with acute base, acutish, or usually with a very abrupt, short obtuse point; some entire, but mostly with several unequal obtuse teeth, with acute sinuses, toward the summit, bright-green, thickish, the venation stout; 5 or 6 ascending secondaries on each side, falcate, with a fine and strong intervening reticulation. Flowers not seen. Nearly mature buds 1 mm. broad, subglobose, on short pedicels, the panicles narrow and racemiform. Fruiting peduncles about 5 cm. long, slender, more than double the length of the fruiting portion, the simple tendrils at its base, strongly flattened, circinate. Fruits with abruptly contracted pedicel-like base, crimson, mostly inequilateral, 8 mm. long and about as broad, finely many-wrinkled, the summit mostly slightly depressed and bearing 3 small styles. Seed solitary, brown, wrinkled, shining, 5 mm. broad, the basal half enclosed in a gray 2- to 3-lobed aril.

Reyes, 1,000 feet, *H. H. Rusby,* November 12, 1921 (*no. 1730*).

Rhamnaceae

Karwinskia oblongifolia

(Fruiting specimen.) Very finely and softly gray-tomentellate, the upper leaf-surfaces bright-green and subglabrous. Branchlets slender, terete, ascending, leafy. Leaves opposite, the stipules 1 or 2 mm. long, broadly ovate. Petioles mostly 6 to 9 mm. long, slender, the margins strongly involute. Blades 5 to 10 cm. long, 2 to 3.5 cm. wide, narrowly or broadly oblong, with acute base and acute mucronate summit, entire, the slender midrib and 10 or 12 pairs of secondaries mostly narrowly channeled above, sharply prominent beneath, the straightish secondaries ascending at an angle of about 45 degrees and connected by innumerable straightish tertiaries. Cymes short-peduncled, 2- to 4-fruited, the pedicels slender, about half as long as the fruits,

which are 8 to 10 mm. long and two thirds as broad, ellipsoid or slightly narrower at the base, sometimes tipped with a short style-base. Fruiting calyx 2 to 3 mm. broad, shallowly crateriform, bearing 5 very short setaceous teeth.

On the pampas about Lake Rogagua, at about 1,000 feet, *Martin Cardenas,* November 1, 1921 (*no. 1394*).

This was a shrub, about a meter high, on the lake margin. Mr. Cardenas collected it as a good-sized tree a few days later, in the same locality (*no. 1632*). This specimen has leaves a half larger, and of narrower form. The writer collected it as a small tree, about fifty miles nearer the Beni River, November 12 (*no. 1724*), the fruit reported as being edible. The species is near *K. Humboldtiana* of Mexico.

Elaeocarpaceae

Sloanea xylocarpa

(Fruiting specimens.) Petioles, principal veins of the lower surface, etc., tomentellate. Branchlets stout, leafy. Petioles 2 to 3 cm. long, the blades 10 to 15 cm. long, 6 to 10 cm. wide, ovate, with broad or subtruncate base and blunt summit, obscurely sinuate, thick, dark-green, the midrib and some of the secondaries lightly grooved above, very stout and prominent beneath, the secondaries about 12 on a side, ascending at about 45°, lightly falcate, connected by straightish tertiaries, the venation very finely and strongly reticulate. Panicles lax, long-peduncled, the peduncles very stout. Capsules brown, shortly and stoutly pedicelled, 2 to 2.5 cm. long, densely and unequally tuberculate, the tubercles aristate, the aristae terete, weak and irregularly curved. Valves 4, thick and woody. Seed about 1 cm. long, obovoid, with a broad, light-colored highly convex cap at the larger end, apparently a strophiole.

Tumapasa, 1,500 feet, *M. Cardenas,* December 9, 1921 (*no. 1979*).

Sloanea fragrans

Inflorescence gray-tomentellate. Branchlets very stout. Petioles of the larger leaves 2 dm. long, 7 mm. thick, terete, hollow, strongly nerved. Blades to 7 dm. long and 3 dm. broad, obovate, obtuse, with rounded base, the margin obscurely sinuate, obsoletely dentate, coriaceous, drying brownish, the midrib very stout, the secondaries 15 to 20 on each side, spreading widely,

the outer portions strongly falcate, connected by a number of crooked, slender tertiaries, the venation strongly and finely anastomosing, lightly prominent on both surfaces. Flowers racemose, the racemes solitary or variously clustered, mostly longer than the petioles, only the terminal portion usually floriferous, the peduncle and rachis stout, coarsely angled or sulcate. Bracts 5 to 7 mm. long, boat-shaped, keeled, acute, coriaceous. Pedicels mostly about twice the length of the bracts, stout, many-costate. Sepals about 8 mm. long and half as broad, very thick, especially at the base, tomentose on both surfaces, lanceolate, obtusish, the petals similar. Stamens very numerous, densely massed, the thick fleshy filament about as long as the thecae, the anther narrowed toward the base, about 7 mm. long, the acuminate, acute, rigid appendage about a third of its length, the anther about 1 mm. wide, or less, gray-puberulent, the appendage yellow, subglabrous. Ovary short-ovoid, 4 or 5 mm. wide, densely short-scaly, the style tomentose, stout, tapering, a little longer than the stamens. Fruit depressed-globose, reaching to 2 dm. in breadth, densely long-spinose. Seeds 2 or 3 cm. in width, irregularly ovoid, light-scarlet.

On the shore of the Bopi River, 3,000 feet, *H. H. Rusby,* September 8, 1921 (*no. 742*). Local name "Cabeza del Negro" (Negro-head). A large forest tree, flowering while still bearing some fruits of the preceding crop. Its flowers are abundant, and a beautiful combination of pink and yellow, and very fragrant. In many places, the forest floor is covered with the chestnut-like seeds, or with their remains, dropped by parrots and other birds which feed eagerly upon them. There were indications that terrestrial animals devour those which fall.

Tiliaceae

Corchorus aquaticus

Gray-puberulent, especially above, the hairs of the stem very short, many of them retrorse. Stems to 4 dm. high, mostly simple, slender, mostly angled or sulcate, herbaceous. Stipules setaceous, 2 or 3 mm. long. Leaves very heteromorphous, very small or rudimentary at the base, where they are ovate or oval, becoming longer and narrower upward, the uppermost often 5 cm. long and only 3 to 5 mm. wide, all except the lower inclined to be erect or ascending. Blades thin, pale-green, the slender petioles about a sixth of the length; acuminate at both ends,

acutish at the summit, finely and sharply serrate, subtrinerved, the secondaries numerous, erect or suberect. Flowers axillary and in a short few-flowered raceme at the summit, the pedicels filiform, about 8 mm. long. Sepals 5, 1 cm. long, 3 mm. wide, lanceolate or oblanceolate, acuminate, acutish, pilose. Petals about half as long as the sepals. Stamens numerous, two thirds the length of the sepals, exceeding the style. Ovary oblong, about as long as the stout style, obtusely angled. Capsule 4 cm. long, 3 or 4 mm. broad, linear, lightly curved, abruptly short-mucronate, the spreading pedicel one fourth the length of the capsule.

Near Reyes, 1,000 feet, *O. E. White,* October 28, 1921 (*no. 1517*). "An herb, 5 to 10 inches high, in damp bog, in big swamp." Also collected by the author, in the same locality, growing in shallow water, in sunshine (*no. 1445*).

Malvaceae

Abutilon laxum

More or less hairy throughout, in varying form. Branchlets elongate, slender, ascending. Petioles to 5 cm. long, slender, short pilose. Blades 5 to 15 cm. long, 4 to 10 cm. wide, ovate, cordate, acuminate and acute, dentate with short or nearly obsolete broad teeth, thin, rather harsh to the touch, deep-green and scabrellate above, pale-green and stellate-scurfy beneath, mostly 7-nerved, the nerves slender, sharply prominent beneath, connected by a loose reticulation. Flowers crowded at the ends of the branchlets, the pedicels slender, about 3 cm. long in flower, 5 or 6 cm. in fruit. Calyx ferruginous, 1 cm. or more in length, divided about two thirds of the length, thick, the lobes ovate, mucronate. Corolla about twice the length of the calyx, rose-colored. Carpels 10, nearly 1.5 cm. long, truncate, obtuse, tomentellate.

Along the Bopi River, 3,000 feet, *H. H. Rusby,* September 11, 1921 (*no. 658*). The same collected in Bolivia by M. Bang, without number or date. Of this Mr. E. G. Baker says that it is nearly allied to "*Sida globifera* Hooker," which is *Abutilon.*

Wissadula filipes

Densely and closely stellate-tomentellate, the lower leaf-surfaces white, or the younger ones yellowish. Branches slender

and lax. Stipules small, subulate with setaceous summit. Petioles to 1.5 cm. long, slender. Blades to 5 cm. long, 4 cm. wide, deltoid-ovate, with truncate or subcordate base, obtuse or acutish, entire or obscurely crenate-dentate, the 5 nerves strong and prominent beneath, lightly impressed on the green upper surface. Panicle large, very lax and open, the branches almost filiform, subtended by minute leaves. Flowers solitary on long filiform pedicels. Calyx 4 mm. broad, divided more than half way, the lobes ovate, acutish. Fruit 7 mm. broad, the carpels rostrate, the beak short, stoutly conic, acute, spreading.

On the pampas near Lake Rogagua, 1,000 feet, *M. Cardenas,* November 4, 1921 (*no. 1623*). Species closely resembling *W. Fadyenii.* It is also near *W. periplocifolia,* but the form of its very small carpels is quite different.

Pavonia ageratoides

Finely puberulent, and pilose with longer divergent rigid white hairs. Stems stout, the branchlets short and leafy. Stipules mostly reflexed, about 4 mm. long, subulate, acuminate and acute, green. Petioles 1 to 3 cm. long, slender, divergent or somewhat reflexed. Blades 2 to 4 cm. long and about equally broad, ovate, cordate, acute or very shortly acuminate, finely and regularly crenate-serrate, thin, deep-green above, gray-green beneath, slenderly 5- to 7-nerved. Pedicels axillary, solitary, very slender, twice as long as the petioles. Bracts mostly 7, about 8 mm. long, 0.5 mm. wide, linear, acute, herbaceous, pilose. Calyx about two thirds the length of the involucre, lobed about half way, herbaceous, pilose, the lobes ovate, obtusish. Corolla 2 or 3 times as long as the calyx, yellow but drying to pink, finely veined. Stamens about two thirds the length of the petals.

Canamina, 4,000 feet, *O. E. White,* July 21, 1921 (*no. 276*). "A herb, 6 to 15 inches high, in sunny places along irrigating ditches, the flowers yellow."

Pavonia canaminensis

Softly tomentellate with stellate hairs. Stems stout, the branchlets short. Stipules 1 cm. or more long, subulate with elongate linear summit. Petioles about 5 mm. long, stout. Blades 3 to 10 cm. long, 2 to 5 cm. wide, ovate with rounded base and acute summit, irregularly serrate-dentate, thickish, deep-

green, flabellately 4- or 5-ribbed, the ribs strong on the lower side. Pedicels slender. Bracts 7, about 1 cm. long, 2 to 2.5 mm. wide, oblanceolate, obtusish, green. Calyx two thirds the length of the bracts, divided about half-way, the lobes ovate, acute, ciliate, green, with a strong midrib. Petals about twice as long as the bracts, exceeding the stamen-column.

Canamina, 4,000 feet, in cultivated ground, along ditches, *H. H. Rusby,* July 15, 1921 (*no. 85*).

Pavonia subtriloba

Subsetose with rigid, white, divergent hairs. Stipules 4 or 5 mm. long, lanceolate, acuminate and acute, green. Petioles about a fourth the length of the blades, terete. Blades 3 to 5 cm. long, 1.5 to 4 cm. broad, triangular-ovate, with (or the upper without) a pair of short basal lobes, with shallowly cordate base and obtuse summit, lightly and irregularly crenate-dentate, thickish, pale beneath, 3- to 5- or 7-nerved with connecting secondaries, the loose reticulation lightly prominent beneath. Flowers axillary, mostly solitary, the peduncles nearly equaling the leaves. Bracts 7 to 10, nearly twice the length of the calyx, narrowly linear, green, pilose. Calyx herbaceous, divided more than half way, the lobes triangular-ovate, acute. Petals about twice the length of the calyx and about 1 cm. long, yellow, but drying to a rose-color. Fruit not mature.

Canamina, 4,000 feet, *O. E. White,* July 19, 1921 (*no. 512*). "A herb 4 or 5 feet high, in cultivated ground, the flowers yellow."

PELTOBRACTEA gen. nov.

Involucral scales stipitate and peltate. Calyx 5-lobed, costate, rigid, the lobes broad, acute. Petals 5, obovate, venose. Stamen-tube very shortly 5-toothed at the summit, the anther-clusters tending to a zonal arrangement, one circle near the summit, the other below the middle, with additional scattered clusters, the free portions of the filaments very slender, the anthers short and broad, obcordate, the thecae diverging upward and separated by a broad connective. Ovary 5-celled, the cells 1-ovuled. Style 10-lobed, the lobes short, the stigmas discoid. Capsule not appendaged, 5-lobed, 5-celled, 5-seeded, the cells loculicidally dehiscent. Seeds incurved, margined, the margins thickened.

FIGURE 5. *Peltobractea nigrobracteata* Rusby. A, flowering branch; B, exterior of calyx with bracts, × 2; C, lateral view of bracts, × 3; D, stamen-column and style, × 3; E, anther with thickened connective, × 10.

The affinity of the genus is obviously with *Pavonia,* but its peltate bracts, peculiarly separated thecae, and unappendaged carpels effectually exclude it from that genus.

Peltobractea nigrobracteata

Lightly scabrous, the inflorescence pilose. Stems slender, terete. Stipules 5 or 6 mm. long, subulate, attenuate. Leaves subsessile, 2.5 to 5 cm. long, 7 to 15 mm. wide, lanceolate, with rounded, sometimes subcordate base and acuminate acute summit, serrate-dentate, pale-green, thick and rigid, 3-nerved, the nerves impressed above, very strong and prominent beneath, like the loosely reticulate venation. Flowers solitary or few, in the upper axils, very shortly pedicelled. Bracts of the involucre 10, stipitate, peltately attached to the stipe at about a third of their length. Stipes lightly connate at the base, half the length of the calyx, terete, whitish, pilose. Limb more than half the length of the stipe, lanceolate, with rounded base and acute summit, thick and rigid, concave beneath, pilose, purple-black in the dried state (in the fresh state?). Sepals about 1 cm. long, 7 mm. broad, ovate, acuminate and acute, whitish, with 5 strong green ribs, connate for nearly half their length. Petals 1.5 cm. long, 1 cm. broad, obovate with rounded summit, pink. Styles shorter than the petals, the branches 2 mm. long, the stigmas discoid. Stamens not numerous. Capsules about 8 mm. broad, 4 mm. high, lightly 5-lobed, depressed in the center, light-brown, sparsely rough-hairy.

On the pampas at Rosaria, near Lake Rogagua, 1,000 feet, *M. Cardenas,* November 4, 1921 (*no. 1654*). Also at Ixiamas, 1,000 to 1,500 feet, *O. E. White,* December 15, 1921 (*no. 1123*). Dr. White says "An herb, 2 to 3 feet high, with salmon-pink flowers, growing in sunshine, in damp clay-loam."

Hibiscus rectiflorus

Gray-tomentellate throughout. Stems tall, stout, little branched or simple, more or less sulcate or angular, the flowers solitary in the axil. Stipules 5 or 6 mm. long, lance-linear, attenuate and acute. Petioles 1 to 2 cm. long, stout, shallowly grooved above. Blades 6 to 10 cm. long, 2 to 3 cm. broad, oval or oblong, with rounded base and acute summit, entire, thick and rigid, light-green above, gray beneath, where the venation is strongly prominent and closely and strongly anastomosing, the secondaries about 8 or 10 on each side, strongly ascending.

Flowering peduncles to 5 cm. long, erect, terete, dilated at the summit. Bracts 10, distinct, unequal, shorter or longer than the calyx, linear or slightly broader above, obtuse, thick, with very strong midrib. Calyx 15 to 18 mm. long, the sepals nearly distinct, lanceolate, acutish, very thick, 3-nerved, the midrib very stout. Corolla about 5 cm. long, papillose or scurfy externally, light-yellow with reddish center.

Near Reyes, 1,000 feet, *O. E. White,* October, 1921 (*no. 1538*). "A foot or two high, in pampas, in sunshine."

Hibiscus rhomboideus

Densely gray-tomentose throughout. Stem stout, terete, branched above. Stipules very small, linear or setaceous. Petioles 3 to 5 mm. long, very thick. Blades 3 to 4 cm. long and nearly as wide, ovate with truncate subcordate base and blunt summit, very finely crenate-dentate, thick, gray-green on both sides, 5-ribbed, the ribs thick, prominent beneath, the secondaries only one or two on a side. Flowers several, crowded at the ends of the branches, the pedicels very short. Bracts linear or stoutly setaceous, mostly a little shorter than the calyx, 1.5 cm. long, divided half way, the lobes ovate, acute, thick, with strong midrib. Corolla (imperfect) apparently about 5 cm. long. Style-branches 10, about 2.5 mm. long, the stigma capitate.

On the pampas, near Lake Rogagua, 1,000 feet, *H. H. Rusby,* October 28, 1921 (*no. 1383*). "Scarce, in muddy places, the flowers rose-colored."

Bombacaceae

Bombax rurrenabaqueana

Glabrous. Petioles 3 to 8 cm. long, slender, grooved on the upper surface, the stipules subulate, acute, thick, rigid, 2 mm. long. Leaflets 5, occasionally 7 in my specimen, subsessile, 7 to 15 cm. long, 2 to 5 cm. wide, oblanceolate, the summit rounded, often slightly retuse and with a minute apiculation, the base sharply acuminate, entire, thin, pale beneath, the venation slender, prominent on both sides, strongly and rather coarsely reticulate, the secondaries about 10 on each side, crooked, widely spreading, then falcate and interarching a short distance from the margin. Flowers (always?) two together, the peduncles about 1.5 cm. long, very thick, ferruginous like the calyx, which is 2 cm. long, 1 cm. wide, cupulate, ferruginous-tomentose, trun-

cate, with 2 or 3 irregular short teeth. Corolla about 1.5 dm. long, the segments greenish-dull-brown, linear-oblanceolate, ferruginous-tomentellate on both surface. Stamens very numerous, apparently in 10 phalanges, brown, nearly as long as the corolla. Style filiform, the stigma truncate or minutely 2-lobed.

Rurrenabaque, 1,000 feet, *H. H. Rusby,* October 7, 1921 (*no. 1571*). A small tree in the forest.

Sterculiaceae

Guazuma coriacea Rusby, Bull. N. Y. Bot. Gard. **4**: 332. 1907.

This species, well distinguished by its globose fruits, with the tubercles obtuse or unappendaged, has been known only in the fruiting state. *No. 1401* is in flower and appears identical with the species named, although this cannot be positively asserted without directly connecting collections of flowers and fruit. The following is a complete description of these flowering specimens:

Finely and closely grayish stellate-tomentellate. Branchlets elongate, straight, slender, terete or obscurely angled near the nodes. Stipules not seen. Petioles to 2 cm. long, rather stout, somewhat enlarged upward, terete, tomentose. Blades to 15 cm. long and half as wide, ovate, with rounded, truncate or subcordate base and acuminate and acute summit, finely and unequally crenate-dentate, rather thin, drying yellowish-green, the venation prominent beneath, the midrib strong, the secondaries slender, 6 to 8 on each side, with some small intermediate ones, ascending at about 45 degrees and lightly curved, connected by a coarse anastomosis. Cymes solitary in the axils, the peduncles mostly shorter than their petioles, the flowering portion usually a little longer than the peduncle. Bracts small, narrowly subulate. Pedicels shorter than the flowers. Calyx 2-parted, the segments 3 or 4 mm. long, strongly concave. Petals 5, yellow, the body 4 mm. long, narrowed at the base, strongly concave, the summit involute, bearing 2 linear ligules, 5 or 6 mm. long, united at the base. Stamen-tube campanulate, 2 mm. long and broad, the sterile lobes nearly as long as the anthers, acuminate but obtusish. Stamens apparently 5 in a cluster, the filaments united two thirds of their length. Style slightly longer than the stamen-tube, slightly 5-cleft. Fruit not seen.

In copses about Lake Rogagua, 1,000 feet, *M. Cardenas,* November 1, 1921 (*no. 1401*). "A large tree, with yellow flowers."

OCHNACEAE

Ouratea flexuosa

Glabrous, the branches recurved or flexuous, mostly stout, gray, more or less annulate. Leaves 6 cm. to 18 cm. long, and 2.5 to 5 cm. wide, mostly narrowly oblanceolate, with acuminate and acute summit, and long-acuminate base tapering into a short dark-brown margined petiole about 5 mm. long; thickish and rigid, slightly lustrous on both sides, finely and very sharply serrate, the venation slightly prominent on both sides, the midrib strongly so, the principal secondaries abruptly upcurved and then erect, connected with the midrib by numerous finer ones. Racemes terminal, short, densely flowered, the rachis thick, stout and nodose from the fallen flowers. Pedicel thick, nearly as long as the sepals, which are 6 to 7 mm. long, 2 mm. wide, lanceolate, thick, dark-colored. Petals about equaling the sepals, ovate, dark-yellow. Anthers subsessile, as long as the petals, narrowly lanceolate, the white pores very small. Ovary 1 mm. wide and about half as long, blackish, the stout stipe about 1.5 mm. long, the stout style equaling the stamens.

In the Bopi River valley, 3,000 feet, *Rusby & White,* August, 1921 (*no. 667*).

Ouratea macrobotrys

Glabrous, the branchlets elongate, slender, terete, densely leafy. Leaves 8 to 16 cm. long, 2.5 to 4 cm. broad, lanceolate, abruptly short-acuminate at both ends, acute, the margined petiole about 7 mm. long; thin, scarcely lustrous, sinuately serrulate, the venation not prominent, the principal secondaries strongly ascending. Racemes (in young fruit) terminal, slender, elongate, the rachis minutely downy, the pedicels 8 mm. long. A single flower exhibits lanceolate sepals 6 mm. long, the petals about equaling them.

At the junction of the Rivers Beni and Madre de Dios, *H. H. Rusby,* August 1886 (*no. 2710*).

A plant collected at Huachi, 1800 feet, *M. Cardenas,* September 4, 1921, in flower (*no. 1007*), is probably the same, though the leaves are a little broader, oblanceolate and sharply serrulate.

Calophyllum ellipticum

(Fruiting specimens.) Glabrous. Branchlets short, stout, strongly wrinkled in the dried state, dark-purple or blackish, very

leafy. Petioles about 1 cm. long, stout, broadly channeled above. Blades to 1 dm. long and half as broad, nearly elliptic, both base and summit very lightly produced, obtuse, entire, thick, yellow-green and strongly shining, the midrib very strong beneath, much wrinkled, mostly thinly channeled above; pectinately veined, the secondaries extremely numerous, nearly at right angles with the midrib. Cymes few-fruited, short-peduncled, the peduncles and short pedicels slender, erect, spreading. Fruits in the dried state globose, 2 to 2.5 cm. broad, bearing style, nearly 1 mm. long, and stigma, until nearly mature. The stigma is 1 mm. broad, the margin reflexed and 4-lobed. Fruit pulpy, 1-seeded.

Lake Rogagua, 1,000 feet, *H. H. Rusby,* October 31, 1921 (*no. 1384*). "A tree on lake margin."

Rheedia Achachairu

(Fruiting specimen.) Glabrous. Branchlets slender, divaricate, fleshy, greenish, sharply angled. Petioles 1.5 cm. long, thick, dilated and clasping at the base, transversely finely many-wrinkled. Blades to 15 cm. long, 5 cm. broad, oval, with acute base and very abruptly short-pointed, acute summit, entire, thick, drying yellowish-green, the venation prominent on both surfaces, the secondaries about 40, with intermediate smaller ones. Peduncle slender, nearly 1 cm. long. Persistent sepals 2, oval, 2 mm. long, strongly reflexed. Berry globose, yellow, 2 cm. broad. Stigma black, nearly sessile, 2 mm. broad. Seed mostly 1, sometimes 2.

Rurrenabaque, 1,000 feet, *M. Cardenas,* October 12, 1921 (*no. 1256*). "Fruit edible, and known locally as 'Achachairu.' A shrub or small tree of the forest, with yellow fruit." A specimen, collected by Dr. White (*no. 1476*) appears to me to be the same, although he says that the fruit has a waxy bloom, and is bluish, possibly because immature.

Rheedia rogaguensis

(Fruiting specimen.) Glabrous. Branchlets crooked, weak. Petioles about 1.5 cm. long, channeled above. Blades to 2 dm. long and 8 or 9 cm. wide, oval, with abruptly contracted base narrowed gradually into the petiole and abruptly short-pointed summit, entire, not thick, the slender venation prominent beneath, the secondaries about 12 or 14 on each side, widely spreading and little curved except at the ends, decurrent upon the mid-

rib. Fruits solitary, on stout peduncles nearly 1 cm| long, minutely puberulent, bearing the persistent style, which is 3 mm. long, the stigma equally broad.

Near Lake Rogagua, 1,000 feet, *H. H. Rusby,* November 4, 1921 (*no. 1611*). A small tree, with edible fruit.

VIOLACEAE

Calceolaria appendiculata

The slender elongate spreading branchlets shortly and roughly hairy, the leaves scabrellate. Leaves opposite, the very short petioles margined, about as broad as long, the blades 4 to 7 cm. long, 2 to 3 cm. wide, ovate with blunt or rounded base and acuminate and acute summit, obscurely crenate-dentate, thin, rigid, bright-green, the slender venation lightly prominent on both sides, the secondaries 5 or 6 on each side, strongly falcate and obscurely connecting near the margin, the venation loosely reticulate. Stipules very small, subulate, thickish, deciduous. Flowers irregularly clustered in axils, subracemose, the slender pedicels at length 5 mm. long, bearing 2 subopposite minute subulate bractlets below the middle. Calyx 1.5 mm. broad and nearly as long, 2 sepals slightly smaller. Large petal nearly thrice the length of the calyx, its yellowish limb about half the length and two thirds of the breadth of its white claw, with which it is connected by a narrow base; ovate, obtuse, entire, the claw ovate, apparently without either sac or glands. Lateral petals nearly as long as the large one, inequilaterally ovate, obtuse, about as broad as the claw of the large one. Fourth and fifth petals a little shorter than the lateral, the basal portion narrowly ovate, the upper portion about as long, linear, obtuse, connected by a narrow base. Two anthers connate, their appendages about half as long as the other three.

Species peculiar in the apparent appendaging of the two petals, of which the lower portions are probably to be regarded as claws.

Huachi, 1,800 feet, *O. E. White,* September 4, 1921 (*no. 1009*).

Calceolaria biacuminata

Glabrous, the branchlets elongate, slender, widely spreading. Stipules inconspicuous, subulate. Leaves opposite, the petioles 1 mm. long, very slender, the blades 1.5 to 4 cm. long, 5 mm. to

3 cm. broad, lanceolate, acuminate and acute, mostly acute at base, shortly and bluntly serrate, very thin, of a light and bright green, the secondaries mostly 4 on each side, slender, rather crooked, strongly upcurved, the venation loose and obscure. Pedicels solitary in the axils, or occasionally 2 to 4 crowded together at the ends, 5 to 7 mm. long, filiform, with or without one or two obscure very narrow bracts below the middle. Calyx pubescent, 3 sepals 1.5 mm. long, ovate, acuminate and acute, the two others only about half as large. Large petal yellowish, 5 to 6 mm. long, the broad claw nearly twice the length of the emarginate limb, its basal, saccate portion broader than the limb. The two lateral petals about half as long as the larger one, inequilaterally ovate, the claw nearly obsolete, the fourth and fifth petals only about half as large as the lateral ones. Stamens at first coherent, with the appendages closely connivent over the stigma, at length completely separated by the growth of the ovary. Stamens 3 mm. long, the acuminate appendages a little longer than the sessile anthers, the two larger anthers glandular, but not spurred at the base. Style equaling the stamens, slightly dilated, curved.

Huachi, 3,000 feet, *H. H. Rusby,* September 21, 1923 (*no. 682*). Species very near *C. sessiliflora* O. Kuntze, but distinguished by its slender pedicels.

Calceolaria balaensis

Youngest portions minutely puberulent. Stems woody, the branches slender, rigid, widely spreading, the leaves opposite. Petioles 5 to 10 mm. long, slender, grooved above. Stipules ovate, 4 mm. long, thick and rigid, deciduous. Blades to 1 dm. long and nearly half as wide, obovate with acute base and abruptly short-pointed obtuse summit, obscurely sinuate, thin, pale-green, glabrate, the midrib and secondaries mostly impressed above, sharply prominent beneath, the secondaries 8 to 10 on each side, widely spreading, then strongly falcate-ascending, connected by very numerous crooked tertiaries. Flowers few, racemose at the ends of short branchlets, the bracts subulate, acute, about 1 mm. long. Pedicels about 2 mm. long. Sepals small, lanceolate. Largest petal 5 mm. long, the claw about a third of its length, the sac short and angular. The other petals a little shorter, narrow, the claw short and broad. Anther-appendages lanceolate, yellow, unequal, longer than the anthers, the anthers sessile, distinct.

A single specimen, Bala, *O. E. White,* without definite data (*no. 1479*).

Flacourtiaceae

Casearia berberoidia

Subglabrous. Branches short, stout, flexuous, gray-brown, very leafy, the leaves crowded at the ends of very short branchlets. Leaves from 1.5 cm. to 4 cm. long and two thirds or more as broad, on extremely short petioles, obovate with broadly cuneate base, or some nearly orbicular, the summit rounded or obtuse, or occasionally very slightly mucronate. Blades thickish, the revolute margin obsoletely and usually obscurely dentate. Both surfaces of a dull yellowish-green, slightly shining above, the coarsely reticulate venation prominent on both surfaces, the secondaries about 4 on each side, connecting at some distance from the margin. Flowers few, crowded at the ends of the branchlets, in the axils of imbricate bracts, which are 3 or 4 mm. long, broadly ovate, acuminate, the inflorescence minutely puberulent. Pedicels about 3 mm. long, filiform, bearing several short broad scales at the base of the calyx. Sepals 5, 4 mm. long, oblong or oblanceolate, obtuse. Filaments, staminodia and ovary densely white-pilose, the stamens and style about two thirds as long as the sepals, the style undivided, the stigma capitate. Staminodia more than half as long as the stamens, the upper portion a little broader.

Rosario Hacienda, pampas near Lake Rogagua, 1,000 feet, *H. H. Rusby,* November 4, 1921 (*no. 1652*).

Casearia albicaulis

Glabrous, excepting the minutely gray-puberulent inflorescence. Stems much branched, the branchlets short, rather stout, terete, light-gray, unarmed. Leaves to 10 cm. long, and 4 cm. wide, obovate, abruptly contracted into a petiole about 5 mm. long, and with a strongly mucronate summit, shortly and obtusely serrate-dentate, thin, the principal veins prominent beneath, the secondaries about 4 on each side, strongly ascending, the venation coarsely reticulate. Umbels sessile, many-flowered, densely bracted at the base, the bracts short, the pedicels very slender, about 5 mm. long, all gray-puberulent. Sepals 5, lanceolate, 5 mm. long. Stamens 10, at length about equaling the sepals, lightly attached to the base of the sepals. Staminodia about half as long as the stamens, oblanceolate, pilose or serrulate, unguiculate. Pistil 4 mm. long, pilose, the style tapering, continuous with the ovary, the stigma small.

On the pampas of Lake Rogagua, 1,000 feet, *H. H. Rusby,* October 28, 1921 (*no. 1366*). "A large shrub, in copses, the flowers white."

On the 4th of October, the author collected at Rurrenabaque, 1,000 feet (*no. 781*), fruiting specimens of what appears to be the same species. The leaves are somewhat larger, but in other respects the same. The sessile fruit, in the dried state, is subglobose, and 2 cm. in diameter, blackish or deep-purple and glabrous.

Turneraceae

Piriqueta seticarpa

Bristly-hairy, the hairs of the stem divergent and ferruginous, the upper leaf-surfaces strigose, the lower pilose. Stems a half-meter tall, sparingly branched, slender, terete, the branches erect. Petioles 5 to 6 mm. long, stout, the glands not apparent. Blades 3 to 5 cm. long, 2 to 3 cm. broad, oval-ovate with rounded base and blunt summit, lightly sinuate-dentate, the secondaries about 5 on a side, prominent beneath, strongly ascending and lightly curved. Pedicels slender, about half as long as their leaves. Calyx broadly campanulate, 5 or 6 mm. long, deeply parted, the lobes ovate, acute. Petals nearly a half longer than the calyx, the stamens only about half the length of the calyx. Ovary densely setose, chaffy, or scaly. Styles about as long as the stamens, distinct, dilated at the summit, the ends shortly and coarsely divided. Capsule 5 or 6 mm. long, and about as broad, oval, appressed, pilose.

On the pampas of Lake Rogagua, Rosario Hacienda, 1,000 feet, *O. E. White,* November 2, 1921 (*no. 1547*). Species near *P. ovata* (Bello) Urban.

Turnera muricata

Puberulent throughout except on the upper leaf-surfaces, which are sparsely and minutely strigose and somewhat harsh, though somewhat shining. Stems tall and rather stout, erect, simple, terete, purplish-red. Petioles 5 or 6 mm. long, stout, channeled above. Blades 5 to 12 cm. long, 2 to 3 cm. wide, lance-oblong, acute, obtuse or barely acute at the base, very shallowly dentate, thickish, the slender venation lightly prominent beneath, the secondaries about 7 to 9 on a side, strongly ascending,

connected by an abundant strong reticulation. Pedicels very short, stout. Calyx 5 mm. long, divided nearly to the base, the segments lanceolate, mucronate, nerved, with strong midrib. Petals about as long as the calyx, thickish, obovate, strongly nerved, the nerves about 10, branched. Filaments filiform, anthers short, sagittate. Styles united nearly to the summit, stout, strongly appressed-pilose, the lobes shortly and stoutly fimbriate. Capsule 7 or 8 mm. long, and nearly as broad, globoid, dark-brown, strongly muricate.

Eastern Bolivia, without data (*no. 2009-A*).

Turnera Whitei

Glabrous, except for some sericeous hairs on and near the buds and young flowers. Much branched, the branchlets short and leafy, the internodes mostly less than a third the length of their leaves, brown, angled. Basal leaf-glands not manifest. Petioles very short, margined, the blades 2.5 to 5 cm. long, 1 to 2 cm. wide, lance-oblong, short-acuminate at both ends, acute, thickish, very sharply serrulate, the teeth slightly salient, paler beneath, the brownish venation coarsely and strongly anastomosing, prominent on both sides, especially underneath. Flowers solitary or racemosely 2 to 5 in the axils, the very slender pedicel about as long as the flower, bearing a pair of minute linear bracts about or above the middle. Calyx 5 or 6 mm. long, campanulate, yellow with five greenish ribs continued into the triangular acuminate and acute teeth, which are a third of the length of the tube. Petals a half longer than the calyx, attached above the middle of the tube, broadly spatulate. Stamens attached near the base of the tube and about equaling it, the anther ovate, with cordate base and slightly inflexed acuminate summit. Ovary conic, more than half the length of the calyx-tube, the three styles distinct, nearly twice the length of the ovary, dilated upward, the stigmas copiously fimbriate. Fruit (mature?) globose, light-brown, 5 mm. long.

Canamina, 4,000 feet, *O. E. White,* July 20, 1921 (*no. 524*). "A shrub, 4 to 6 feet high." Species related to *T. Weddelliana* Urb. & Rolfe.

Passifloraceae

Passiflora translinearis

Glabrous. Stems very slender, sharply angled or subalate, and sulcate. Stipules small, varying from slenderly setaceous

to narrowly subulate. Tendrils elongate, slender, mostly flattened, at least toward the base. Petioles about 1 cm. long, slender, brown, apparently glandless. Blades about 6 mm. long and 12 cm. wide, the base slightly cordate, the summit slenderly aristate, the two lobes almost directly divaricate, scarcely 1 cm. wide, lanceolate with slightly narrowed base and mostly obtuse summit, entire, a small circular whitish gland at the junction of the central and lateral ribs. Leaf thin, the venation prominent on the lower surface, the secondaries of each lobe numerous, connecting with one another in a sinuous line near the lower margin, and, near the upper margin, with a secondary from the midrib. Peduncle 5 cm., or more long, 1-flowered, very slender. Bracts 1.5 cm. long, 3 or 4 mm. wide, oblong-oblanceolate, sharply serrate. Sepals 5, somewhat unequal, the longest 5 cm. long, 1 cm. wide, 3 or 5-nerved, lanceolate, the setose awn extending 3 or 4 mm. beyond the summit. Petals about as long as the sepals, linear, acute. Crown apparently single, the fimbriae 1 to 1.5 cm. long. Colors not noted. Gynophore nearly 3 cm. long, rather stout. Free portions of filaments 7 mm. long, stout, strongly ribbed. Anther nearly as long as the filament, broad. Styles about 4 mm. long, stout, the stigmas capitate.

In a copse of the pampa near Lake Rogagua, 1,000 feet, *H. H. Rusby,* November 4, 1921 (*no. 1619*).

Passiflora yacumensis

Petioles, leaf-veins, etc., sparsely short-pilose. Stems slender, elongate, cirrhiferous, lightly sulcate. Tendrils simple, elongate, slender. Stipules very small, lanceolate, acute, denticulate. Petioles about 1.5 cm. long, slender, narrowly channeled above, the margins minutely ciliate. Leaves to 7 cm. long and nearly as wide, truncate or subcordate at the base, 3-lobed, occasionally one or both lateral lobes wanting, the margin sharply dentate, with obtuse sinuses; middle lobe nearly two thirds of the length of the leaf, oval or oblanceolate, the lateral lobes about half as long, lanceolate, moderately spreading, all the lobes acute, the sinuses obtuse; texture somewhat rigid, though thin, 5-nerved, the secondaries of the middle lobe about 5 or 6 on each side, the venation strongly anastomosing, prominent on both sides. Peduncle about 4 cm. long, finely angled or sulcate. Bracts 3, about 1.5 cm. long, narrowly lanceolate, acute, unequally serrate-dentate, green, thin. Sepals 5, 4 cm. long, 8 mm. wide at the base, lance-linear, apparently obtuse, the awn 2 mm. long, filiform. Petals 5, 3 cm. long, 3 or 4 mm. wide at the base, linear, obtuse,

very thin. Gynophore 2 to 2.5 cm. long. Free portions of filaments 3 or 4 mm. long, slender. Anthers 5 mm. long. Styles strongly recurved, 6 mm. long, broader above. Stigmas 2 or 3 mm. long, inequilaterally oval, slightly mucronate. Fimbriae of the crown very numerous, slender, about 1 cm. long, apparently 2-seriate. So far as I can judge from my one imperfect flower, there is an inner crown, a little shorter than the outer, which is multi-laciniate nearly to the base. Colors of flower unknown.

Santa Ana de Yacuma, 700 feet, *M. Cardenas,* March 5, 1922 (*no. 21 special*).

Passiflora nigradenia

Glabrous. Stems high-climbing, the branchlets stout, terete. Petioles to 4 cm. long, stout, strongly channeled, bearing 2 large black sessile glands just above the middle. Mature blades to 2 dm. long and 8 cm. broad, oblong or slightly broader below, with rounded or subtruncate base, the summit very abruptly contracted into a short acute point, the margin entire, thinly revolute; coriaceous, the upper surface slightly shining, the slender venation sharply prominent beneath, the secondaries 10 or 12 on each side, falcate-ascending, connected by a coarse anastomosis of the tertiaries. Flowers racemose, the racemes sometimes bearing as many as 10 flowers, and shortly peduncled. Pedicels 3 cm. long, terete. Bracts borne close to the flower, sessile, nearly 3 cm. long and half as wide, ovate or oval, obtuse, bearing a pair of marginal glands close to the summit. Basal annulus of calyx slightly umbilicate, 1.5 cm. broad, sharply contracted into the calyx-tube, which is 1 cm. long. Calyx-lobes 3 cm. long, 12 mm. broad, lance-oblong, acutish, fleshy. Corolla two thirds the length of the calyx, the petals thin, about 1 cm. broad, lance-ovate, obtuse. Bases of petals and calyx-lobes bearing on their inner face a rather sparse circle of erect fleshy setae about 1 cm. long, of whitish color, transversely barred with black. Ligules of the crown very numerous and densely massed, about as long as the calyx, 3 or 4 mm. wide, flat, obtuse, colored like the setae above described, their connate portion about a fourth of the total length, and shortly fringed upon its inner surface. Gynostegium stout, 1.5 to 2 cm. long. Free portion of filaments about 1 cm. long, erect, strongly flattened. Anthers 1 cm. long, oblong, attached below the middle, becoming reflexed and inverted. Ovary shortly stipitate above the filaments, ellipsoidal, 7 or 8 mm. long. Style thick, half as long as the ovary,

the two large globose stigmas coherent. Stipe of fruit 2 cm. long above the bracts, stout, annulate. Fruit nearly 1 dm. long, 8 cm. broad, regularly ellipsoid but umbilicate at the base, glabrous, edible, the epicarp soft.

Rurrenabaque, 1,000 feet, *H. H. Rusby,* December 1921 (without number). Species very near *P. riparia* Mart. for which it was at first mistaken. It appears to produce the largest edible fruit known in the genus, and one that is highly esteemed by the natives of the region where it grows.

Papayaceae

Jacaratia boliviana

This species was described (Rusby, Bull. N. Y. Bot. Gard. 8: 107. 1912) from specimens collected by Mr. R. S. Williams at Charapampa, Bolivia, in late September 1901. These specimens, staminate only, were in flower, and no information regarding the fruit was obtained. In late November, 1921, the species was again collected (*no. 1877*) by Mr. Martin Cardenas, a member of the Mulford Exploration party, at Rurrenabaque, at a somewhat lower altitude, the specimens bearing fruit nearly, if not quite mature. In the young state, the fruit is obovoid, with tapering base and acutish summit. As it approaches maturity, it fills out at both base and summit, and approaches the ellipsoidal form, although the base remains a little narrower than the summit, even in my largest specimen. This, in the pressed and dried state, is about 8 cm. long, by nearly 4 cm. wide. It bears a short annulate stem, nearly as thick as long, and the subsessile black stigma. The color of the fruit is light-yellow, although it may be darker at full maturity. It is known locally as *"Papaya del Monte,"* or Wild Papaw, and is said to be edible.

Combretaceae

Combretum vernicosum

Young branchlets and inflorescence and lower leaf-surfaces closely puberulent and slightly rough, the upper leaf-surfaces strongly lustrous. Branchlets rather stout, terete, very leafy,

the internodes less than half the length of their leaves. Petioles 5 to 7 mm. long, stout, margined. Blades to 1 dm. long and half as wide, ovate with base very abruptly contracted into the petiole, very abruptly and shortly acuminate and acute, entire, thick, deep-green, the slender venation prominent beneath, the secondaries about 6 or 8 on each side, strongly falcate-ascending, connected by the tertiaries, the finer venation finely anastomosing. Panicles axilliary and terminal, shortly peduncled, the flowers densely spicate on the branches, the racemes, in flower, 5 mm. wide. Calyx-tube less than 1 mm. long, the mature bud about as broad as the length of the tube and only half as long. Open flower about 2 mm. broad. Sepals 4, broadly oval, concave, thickish, a little more than half the length of the petals, which are obovate and lightly denticulate. Stamens 8, slightly longer than the sepals.

Along the Rio Ibon, 500 feet, *O. E. White,* February 9, 1922 (*no. 2374*).

Myrtaceae

Calycorectes macrocalyx

Glabrous. Branchlets slender, more or less quadrangular. Leaves divaricate, the petioles about 1 cm. long, stout, narrowly channeled above. Blades to 12 cm. or more long, and nearly half as broad, oval with obtuse or rounded base and a very short, broad, obtuse acumination, thickish, the margin revolute, pale-green, the midrib channeled above, prominent beneath, the filiform secondaries about 12, with some smaller ones intervening, widely spreading, and looped together a little way from the margin. Peduncles (always ?) supra-axillary, 1-flowered, opposite, subtended by nodiform or gland-like small bracts, slender, about 2 cm. long, more or less angled, slightly thickened upward. Calyx 4-parted nearly to the base, the segments nearly 2 cm. long by 5 mm. wide, somewhat unguiculate, the unguis dark or blackish, about half as wide as the limb, which is lance-ovate, blunt, green and leaf-like, thickish, very veiny, the base very abruptly contracted into the unguis. Petals only about half as long as the calyx and about equaling the numerous stamens. Anthers whitish, with yellow connective, about as long as broad, versatile. Disk broad, blackish, the thin margin recurved. Style setaceous, the summit recurved.

Along the Bopi River, 3,000 feet, *H. H. Rusby,* September 12, 1921 (*no. 666*). "On a cliff of the river-bank, in partial shade. Stamens white, turning yellow with age."

MELASTOMATACEAE

TIBOUCHINA MEMBRANIFOLIA Cogn. Bull. Torrey Club 23: 17. 1896.

This species, heretofore known only in flower, appears to have been collected in mature fruit at Canamina, 4,000 feet, *O. E. White,* July 20, 1921 (*no. 278*). In characters of stem, leaf and indumentum, the specimens are indistinguishable from the type, but they show a notable development in the fruiting inflorescence. The peduncles are elongated to 5 and 6 cm., with corresponding elongation of their branches, while some of the pedicels are 1 cm. long. The following is a description of the fruits.

Calyx-tube about 7 mm. long, 4 mm. wide, campanulate, with the mouth slightly contracted, light-brown, strongly 10-ribbed, the ribs broad and obtuse. Limb short, the teeth about a third as long as the tube, triangular, acute, erect-spreading.

Brachyotum setosum Gleason

Stem suffruticose or herbaceous, 15–60 cm. high, freely branched, minutely sordid-setulose and hirsute at the nodes when young, glabrous with age; petioles slender, 3–5 mm. long, closely and minutely appressed-setulose; leaf-blades thick and firm, ovate-elliptic, 12–25 mm. long by half as wide, rounded at both ends, entire, sometimes slightly revolute, 3-nerved, above with 4 longitudinal bands of sparse, stout, appressed, yellow, conic-subulate setae 0.7–1 mm. long and 0.1–0.2 mm. in diameter, otherwise glabrous, beneath yellow-green, sparsely and finely setulose on the veins; flowers solitary or in threes, 5-merous; pedicels stout, 1 cm. long, jointed at the middle, densely appressed-setulose; hypanthium reddish, broadly campanulate, 6 mm. long, closely and finely appressed-setulose with hairs 0.2–0.3 mm. long; sepals deltoid, 4 mm. long and wide, contiguous at the base, abruptly narrowed from below the middle to an acuminate apex, strongly thickened and densely setulose along the center, the lateral basal margins thin, pale, membranous, glabrous, and setulose-ciliate; petals purple, broadly ovate-rotund, 12 mm. long and broad, inequilateral, obtuse, minutely ciliate, somewhat fleshy, reticulate-veined; anthers linear-oblong, straight, 5 mm. long, 1.4 mm. wide, the 2 basal appendages short, ovate, blunt, 0.3 mm. long; ovary ovoid, strongly 10-ribbed, 5

mm. long, 4 mm. in diameter, densely setulose at the apex, the ribs with a short, sharp tubercle at the center, the 5 alternate lobes prolonged beyond the ovary into erect, fleshy, oblong, rounded lobes, 2 mm. long by 0.8 mm. wide, setulose, especially at the apex, with flat erect hairs 0.6–0.8 mm. long; style stout, 1 cm. long, 0.9 mm. in diameter at base, gradually tapering to the blunt stigma.

Pongo de Quime, about 67° W., 17° S., *O. E. White,* 11,500 feet, July 12, 1921 (*no. 151*).

B. setosum is a member of the section *Adesmiae,* and related to species 25 to 28 of Cogniaux' Monograph. It is distinguished from any of these by the peculiar setose pubescence of the upper leaf-surface.

Maieta (?) hispida

Bristly throughout with stout divergent hairs, the leaves ciliate with the same. Stems slender, terete, flexuous . Leaves alternate, one of each pair being obsolete or represented by a mere vestige, or by a small vesicle, or rarely by a small normal leaf. Petioles 1 to 1.5 cm. long, sometimes twisted, rarely with a small vesicle at its base. Leaves 10 to 15 cm. long, 4 to 6 cm. broad, lance-oblong, the summit abruptly contracted into a short, narrow and very acute acumination, the base contracted and then rounded and bearing on its upper surface a green or greenish vesicle with rounded base and of variable form. Leaf finely and irregularly dentate, the teeth triangular and acute and terminating in a bristly hair. Leaf thin, bright-green, much paler beneath, with two pair of nerves starting from near the base, the lower pair slender and terminating in the margin near the summit, the upper joining the midrib near the summit, all prominent on the lower surface and connected by a moderate number of nearly straight, very slender tertiaries, all the venation more or less bristly pilose, the upper portion finely and rather sparsely strigose. Flowers (not seen) mostly one or two in the axil, and usually one upon the opposite side, where a leaf should be, and sometimes borne similarly along slender stems where the leaves are wholly or mostly wanting. Fruits sessile, or nearly so, recurved, each subtended by about 3 closely clasping broadly ovate, carinate and mucronate bracts, half as long as the calyx, the tube of which is campanulate with slightly contracted throat, frequently inequilateral, about 7 mm. long and 4 mm. broad, strongly hispid, or tuberculate with the enlarged bases of the

fallen hairs. Calyx-limb 5 toothed, the united portion shorter than the teeth, wider than the tube, crateriform or short-campanulate, bearing a thickened ring at the base on the inside, the teeth broadly triangular, acutely cuspidate, the cusp strongly reflexed.

Tumapasa, 1,500 feet, *O. E. White,* December 8, 1921 (*no. 1839*).

Although this species is referred doubtfully to *Maieta,* I have no doubt that it is generically distinct therefrom. In *Maieta,* the calyx is not extended beyond the capsule, whereas in this species it is markedly extended, in a dilated form, and with a peculiar annulus on the inside. These characters, especially in this family, have a generic significance. In some ways, the plant is nearer to the genus *Microphysa* than to *Maieta,* but is sufficiently distinct from that also. In the absence of flowers, I am not disposed to propose a new genus.

Onagraceae

Jussieua yacumensis

Densely and minutely puberulent. Stems sharply angled or subulate, at least above. Leaves sessile, very variable in form, from narrowly lance-linear to oval or oblong, with obtuse base and obtuse or acute summit, from 4 cm. long and 3 mm. wide to 4 cm. long and nearly 2 cm. wide; the midrib very stout and prominent beneath, slightly so above, the secondaries about 10 on each side, very prominent beneath, strongly ascending, the basal portion strongly curved, the margin slightly thickened and revolute. Pedicels solitary in the axils, elongate in the fruit, at length nearly 1.5 cm. long, slender. Calyx-tube, in flower, 5 mm. long, 2 mm. wide, short-infundibular, obtusely 4-angled, the lobes nearly a half longer than the tube, lance-linear, acuminate, the midrib very strong, in fruit 3-ribbed with smaller intermediate ones. Petals nearly twice the length of the calyx-lobes. Partly mature fruit broadly infundibular, with 4 strong and 4 lighter ribs.

Santa Ana del Yacuma, 800 feet, *Martin Cardenas,* March 5, 1922 (*no. 18, special*). "Plant 2 to 4 feet high, along roadsides, the flowers yellow, the fruits very small." Also collected on the pampas near Lake Rogagua, 1,000 feet *H. H. Rusby,* November 3, 1921 (*no. 1427*). Also from Buena Vista, Santa Cruz, Bolivia, February 16, 1921, *Steinbach 5326.*

This species is closely related to the widely distributed and extremely variable *J. nervosa* Poir., but its slender habit, smaller size and flowering appear to exclude it.

J. marginata Rusby now appears to me to be an extreme form of *J. nervosa* Poir. with cordate leaves, having lustrous upper surfaces, that seems to represent this species on the southern pampas.

Jussieua biacuminata

Glabrous. Stems aquatic, a meter high, erect, sparingly branched, the branches erect, the base and lower portion of stem much spongy-thickened. Leaves sessile, very unequal, to 1.5 dm. long and 4 mm. wide, sometimes much larger at the base, acuminate and acute at both ends, entire, thick and somewhat fleshy, the midrib very thick and prominent. Pedicels filiform, 5 or 6 mm. long, usually bearing one or two subulate bracts near the summit. Calyx-tube infundibular, a little more than half the length of the pedicel. Calyx-lobes in anthesis widely spreading, 3 or 4 mm. long, ovate, acuminate and acute. Petals white, little exceeding the sepals. Fruiting pedicel not elongate, the capsule 2.5 cm. long, 3 mm. broad, linear, straight or curved, 8-nerved, the calyx-lobes persistent or at length deciduous.

In swamps about Lake Rogagua, 1,000 feet, *H. H. Rusby,* November 3, 1921 (*no. 1601*). "Growing in water, 3 or 4 feet high, the flower white."

Fuchsia filipes

Glabrous, the numerous branchlets elongated and slender. Petioles very slender, 3 to 5 mm. long, the blades 2 to 4 cm. long, 5 to 10 mm. broad, lanceolate and mostly a little inequilateral, regularly acuminate at both ends, more so at the summit, subentire, thin and herbaceous, deep-green above, pale beneath, the secondaries 4 or 5 on a side, slender, strongly ascending, the smaller venation obscure. Flowers mostly one or two in each axil, the filiform pedicels about 1 cm. long, up to 2.5 cm. in fruit. Flowers scarlet, short-pilose, 2 cm. long, slender, the linear-oblong ovary about one sixth, the corolla-tube nearly half of the length, the latter narrow-infundibular, sharply constricted above the ovary, the lanceolate calyx-lobes at length spreading, the margins increasingly involute toward the summit, where they become closed, with a black tip. Petals ovate, very thin, paler than

the calyx-lobes, or yellowish, and about two thirds of their length. Longer stamens about equaling the calyx-lobes, the others a fourth shorter, the filaments filiform, the oval anthers 2 mm. long, attached below the middle. Style about equaling the stamens, slightly thicker than the filaments, clavate at the summit, the short, broad stigma 2-grooved. Fruit ellipsoid, 1 cm. long, 6 or 7 mm. broad, 8-sulcate, transversely grooved. Seeds numerous, brown, inequilaterally pyriform or lightly falcate, about 1 mm. long.

Pulcheri, 10,000 feet, *O. E. White,* July 15, 1921 (*no. 232*). "Shrub 2 to 8 feet high, in rain-forest, the flowers cardinal-red and yellow."

Theophrastaceae

Clavija Cardenasii

Lower leaf-surfaces minutely and sparsely puberulent. Stem erect, simple, to 2 m. high, blackish-gray and finely many-wrinkled in drying. Leaves to 5 dm. long and 12 cm. wide, oblanceolate, the base very gradually tapering into a narrowly winged stout petiole, the summit not seen, minutely and sparsely toothed, the teeth salient and acute, the midrib lightly channeled above, very prominent and terete beneath, the venation prominent on both sides, the secondaries coarsely, strongly and irregularly anastomosing, as does the finer venation. Racemes mostly solitary and simple, about half the length of their leaves, or less, very slender, loosely flowered, irregularly peduncled. Bracts shorter than their pedicels, subulate, acute, thickish, not or little spreading. Pedicels about 1.5 mm. long, thickened upward. Calyx 2 to 3 mm. broad, and not so long, the turbinate tube gradually narrowed into the pedicel, longer than the 5 broadly rounded, whitish, minutely mucronate lobes, loosely enclosing the bud. Corolla scarlet or vermilion, fleshy, 8 to 10 mm. broad, the campanulate tube very short, the lobes subrotund. Staminodia thick and fleshy, broader than long, their breadth about half that of the white stigma, which is 1.5 mm. broad and 10- to 12-dentate or crenate. Staminate flower not present in my specimen.

Rurrenabaque, 1,000 feet, *Martin Cardenas,* November 25, 1921 (*no. 1178*).

Myrsinaceae

Cybianthus glauca

(Fruiting specimen.) Glabrous. Stem terete, apparently simple. Leaves 1 to 2 dm. long, 6 to 9 cm. wide, oblanceolate,

sessile, but narrowed into a short petiole-like base, which is channeled by the incurved wings, obtusish or barely acute, entire, pale or glaucous-green above, very pale underneath, the midrib narrowly channeled above, very prominent and subcarinate beneath, the innumerable secondaries very slender, widely spreading, becoming falcate and anastomosing near the margin. Racemes sessile, very short and few-fruited, the calyx persisting after the fall of the fruit, on slender pedicels less than half the length of the fruit, deeply 5-lobed, the lobes oblong, obtuse, about 1.5 mm. long. Fruit globose or slightly depressed, 6 or 7 mm. broad, red, lightly and sparsely tuberculate.

Specimens purchased from a boy at Rurrenabaque, 1,000 feet, October 8, 1921 (*no. 1581*).

Sapotaceae

Lucuma polycarpa

(Fruiting specimen.) Glabrous. Branchlets stout, very leafy. Petioles to 2.5 cm. long, stout, channeled on the upper surface. Blades to 12 cm. long, 4 cm. wide, oblong, with base gradually contracted into the petiole, and blunt summit, entire, with revolute margin, thick and coriaceous, the upper surface lucid, the venation prominent beneath, the secondaries 18 or 20 on each side, with smaller intermediate ones, the venation strongly and finely anastomosing . Fruits densely spiked along the thick branchlets, subsessile, the branch strongly nodose where the fruits have fallen. Persistent calyx appressed, the sepals subrotund, 4 or 5 mm. broad. Fruit depressed-globose, 3.5 cm. broad, glabrous, the summit umbilicate. Seeds about 4, oval, lightly compressed, 1.5 cm. long, black and shining.

Collection data lost, but probably from the vicinity of Rurrenabaque. Fruit edible.

Sideroxylon bolivianum

(Fruiting specimen.) Glabrous. Branchlets stout, leafy. Petioles 1.5 to 2 cm. long, slightly decurrent upon the stem, narrowly channeled above by the incurved margins, which are continuous with those of the blade. Blades to 1.5 dm. long by nearly 6 cm. wide, oblanceolate or obovate with acuminate base and rounded, mostly slightly apiculate summit, entire, thick, pale or light-green on both surfaces, the midrib stout and rounded on the lower surface, mostly channeled above, the principal secon-

daries 15 to 18 on each side, with many smaller ones, spreading widely, little curved except at the ends, very slender, the slender venation strongly anastomosing. Fruits crowded below the leaves, sessile, globose or slightly broader than long, 2 to 2.5 cm. broad in the dried state, very fleshy, mostly 4- or 5-seeded. Seeds about 1 cm. long, two thirds as broad, brown, strongly shining, nearly ellipsoid, the hilum oblong, extending nearly the entire length.

Huachi, 3,000 feet, *H. H. Rusby,* August 22, 1921 (*no. 691*). "A large forest tree with abundant milky juice. Fruit yellow, sweet and good, but depositing an objectionable amount of gummy resin upon the teeth."

Chrysophyllum ovale

(Fruiting specimen). Glabrous. Branchlets slender, gray, coarsely angled, coarsely pitted with scars, leafy, the leaves mostly larger at the ends. Petioles, including the narrowed leaf-base, with which they are continuous, about 1 cm. long, flat, margined. Blades very unequal, from 3 to 8 cm. long, and 1.5 to 3 cm. wide, oblong or oval, very abruptly contracted into a short point at each end, that at the summit mostly oblique or twisted, mostly obtuse; entire, thickish, shining, the midrib underneath rounded and strong, channeled above, the principal secondaries 12 to 15 on each side, with numerous smaller ones, the smaller venation obscure. Pedicel of the fruit about 4 mm. long, slender. Persistent calyx lobes reflexed, about 1 mm. long, ovate, obtuse. Dried fruit globose or a little longer than broad, about 1.5 cm. broad, fleshy, mostly 1-seeded in my specimens, the seed 1 cm. or more long and more than half as broad, ellipsoid, light-brown, somewhat shining, the gray hilum taking up two thirds of the length and half the circumference of the seed.

Esperanza Falls, 500 feet, *O. E. White,* February 1921 (*no. 1384-A*).

Ebenaceae

Diospyros boliviana

(Fruiting specimen, bearing a single leaf.) Glabrous, with the exception of the calyx. Branchlets numerous, rather stout, light-gray. Petiole 7 mm. long, stout, flattened or shallowly channeled on the upper surface. Blade 6 cm. long, 4.5 cm. broad, obovate, with acute base and rounded summit, entire, coriaceous, shining above, paler beneath, with the slender venation promi-

nent, the secondaries about 5 on each side, reddish, branching, the ends strongly upcurved and connecting at some distance from the margin. Fruits axillary, solitary, very short-peduncled. Calyx coriaceous, brown or purple, the tube crateriform, tomentellate, 1.5 cm. broad, the limb about 5 mm. wide, 3-lobed, the lobes somewhat spreading, but mostly concave, often irregularly notched at the summit, strongly reticulate-veined on the outer surface. Berry about 1.5 cm. broad, depressed-globose, smooth and shining, the summit lightly umbilicate and bearing the short black style-base. Berry 6-celled, the cells 1-seeded. Seeds elliptic-oblong, nearly 1 cm. long and half as broad.

Without data as to locality or date, but probably on the lower Beni River.

GENTIANACEAE

Gentiana longipes

Young stems, calyx, etc., minutely scabrellate. Stems several to many, simple or sparingly branched, ascending, weak, very slender, to about 1 dm. high, 4-angled or with 4 very narrow green wings. Leaves few, sessile, 8 to 12 mm. long by nearly 2 mm. wide, lance-linear, obtuse. Flowers solitary at the ends of the stems, on long slender naked branches, blue or bluish, to 3 cm. long, erect. Calyx-tube campanulate, at length 4 mm. long and 5 mm. broad, bearing 8 green nerves or ribs, 4 stronger than the others, the calyx-teeth about twice as long as the tube, lanceolate, long and regularly acuminate, acute, ribbed or keeled. Corolla 1.5 cm. long, parted nearly to the base, infundibular, the lobes oblanceolate. Stamens 3 or 4 mm. long, the filaments slender, nearly as long as the anthers, which are lanceolate and sagittate, with acuminate basal lobes and acute summit. Ovary linear-oblong, more than 1 cm. long and 2 mm. broad, the stigma sessile, capitate, 2-lobed. Pod 2 cm. long, 5 mm. wide, oblong, or slightly wider toward the top.

Chapare, near Cochabamba, 12,000 feet, *M. Cardenas,* March 28, 1922 (*no. 76 special*). "A rare herb, with bluish flowers, growing in Azorella formation."

Tetragonanthus Whitei

(Fruiting specimens). Glabrous. Stems tufted, 5 to 10 cm. tall, erect, rather stout, branching only at the summit, sometimes reddish below, more or less winged above, the wings green.

Root-leaves to 2 or 3 cm. long, including the long petiole, widely spreading, prostrate or ascending, the blade 4 to 10 mm. or more long, the base tapering into the petiole, thickish, entire, obtuse. Stem-leaves few or none, sessile, lanceolate, to 1.5 or 2 cm. long, yellowish-green, with a stout green midrib. Flowers solitary at the ends of the stout branchlets, all parts persistent. Calyx-lobes 5 mm. long, nearly 2 mm. wide, oblanceolate or spatulate with rounded summit, erect. Corolla-tubes 5 mm. long, erect, lanceolate, acutish, the spur of equal length, completely reflexed. Stamens nearly 2 mm. long, erect, filament and anther about equal, or the filament longer, the filament slender, somewhat flattened, the anther oval, extrorse, attached at about the middle. Pod nearly 1 cm. long, 4 mm. broad, ovoid, acute, 2-valved.

Pongo de Quime, 11,500 feet, *O. E. White,* July 11, 1921 (*no. 178*). "Herb 4 to 6 inches high, in sandy loam, by water edge, in boggy ground. Flowers greenish to yellowish. Rare."

Chelonanthus Whitei

Glabrous, the stems 1 to 2 meters high, erect, terete, simple, or nearly so, the inflorescence successively bifurcating, the branches approximate and erect, many-flowered. Leaves 5 to 9 cm. long by 3 to 5 cm. broad, obovate, entire, acute, gradually narrowed into a petiole-like base, very thin, a pair of strong, coarse, strongly ascending secondaries arising some distance above the base, with a variable number of smaller ones above, the remaining venation weak and scanty. Pedicels stout, shorter than the calyx, reflexed in fruit. Calyx cupulate or campanulate, nearly 1 cm. long and nearly as broad, as pressed, deeply 5-lobed, thick and fleshy, the lobes subequal, broadly ovate, obtuse, with a very short, stout acute terminal point. Corolla abruptly expanded on emerging from the calyx into a campanulate, strongly two-lipped limb, the shorter lip extending 1.3 cm. beyond the calyx, its margin sharply reflexed, the longer extending more than 2 cm. beyond the calyx, its middle lobe nearly twice the length of the lateral. Stamens and style slightly exserted, the anthers broad, minutely muticous, the style stout, its linear branches a fifth of its total length.

Ixiamas, 800 feet, *O. E. White,* December 16, 1921, (*no. 1195*). "Growing in full sunshine, on open pampa, the flowers greenish-yellow." Species near *C. acutangula* (R. & P.) Gilg, but the stem not angled, the calyx larger and the corolla of different form.

APOCYNACEAE

Aspidosperma rigida

(Fruiting specimen.) Lower leaf-surfaces minutely papillose. Branchlets rigid, flexuous, irregularly and sharply angled, sharply nodose at the scars of the fallen leaves. Leaves to 1.5 dm. long and 5 cm. broad, oblong or oval, very abruptly contracted into a stout petiole about 5 mm. long, and similarly contracted at the summit into a short acute acumination, entire, thick and rigid, of a dull pale-green color, the midrib narrowly and sharply grooved above, strongly prominent beneath, the secondaries 10 or 12 on each side, not prominent, slender, widely spreading and lightly curved. Panicle terminating a branchlet of the preceding year, lax, in the type specimen bearing only two mature fruits but with numerous scars where other fruits or flowers have fallen. Fruits monocarpellary, stipitate, blackish. Stipe of the larger one 3 mm. long and broad, the body nearly 3 cm. long and broad, its dorsal outline about two thirds of a circle, the ventral margin straight or nearly so, and 2 cm. long. Margin of fruit not thickened, the surface finely papillose and wrinkled. Seeds to 2.5 cm. long, and 2 cm. broad, oval with one edge less curved, the body brown, 17 mm. long by 13 mm. broad, entirely surrounded by the blackish wing, of unequal breadth and bearing an intramarginal line, the margin entire.

In the Bopi River Valley, 3,000 feet, *H. H. Rusby,* September 12, 1921 (*no. 593*). "A shrub, in the edge of the forest."

Aspidosperma sp.

These interesting specimens consist of mature fruits, with their contained seeds, picked up beneath the trees, and seedling plants, with cotyledons attached. Some young and very tender leaves are present. Since part of their leaves are attached to the seedlings, it is probable that all of them have so originated.

Mature carpels woody, stipitate, the stipe 3 or 4 cm. long, nearly 1 cm. thick, the valves to 1.4 dm. long, 1.1 dm. broad, the dorsal outline nearly semicircular, the ventral moderately curved, the style-scar below the summit, connected with the summit of the dorsal curve by a straight or slightly concave line 2.5 or 3 cm. long. Carpel strongly flattened, with the entire margin strongly and broadly thickened, the surface very densely and finely tomentellate and flabellately many-nerved, blackish or deep-chocolate-colored in the dried state. Seed, including the

wing, to 8 cm. broad, nearly circular, the body 4 cm. broad, the wing lacinately cleft. Entire surface of seed and wing of pale-brown color, the semicircular hilum blackish-brown, 1.5 cm. broad. The leaves are alternate, or the first two opposite, with obtuse base and very shortly produced obtuse summit. Secondaries 8 to 10 on each side, ascending and crooked.

Tumapasa, 1,500 feet, *Martin Cardenas,* December 9, 1921 (*no. 1985*). "A large tree, with very hard wood, in forest. Local name 'Mete' (pronounced May-tay)." Species obviously related to *A. Pohliana* Muell. Arg. Probably undescribed, although it may be a named species of which the fruit is heretofore unknown.

Tabernaemontana unguiculata

Finely tomentellate. Branchlets short, rather stout, roughened with the prominent leaf-scars and interpetiolar lines, leafy at the ends. Petioles 1 cm. or less long, slender, abruptly dilated at the base. Blades to 1 dm. long and a third to a half as wide, oblanceolate, gradually tapering into the petiole, abruptly acuminate and acute at the summit, entire, very thin, deep-green and nearly glabrous above, gray-tomentellate beneath, the midrib finely channeled above, prominent beneath, the secondaries about 12 on each side, widely spreading and strongly falcate toward the ends, the finer venation obscure. Cymes in the upper axils, few-flowered, short-peduncled. Bractlets 1 to 2 mm. long, ovate, acute, closely appressed. Pedicels about 5 mm. long, slightly angled upward. Calyx deeply parted, the tube turbinate, the lobes about 2 mm. long, ovate, obtusish, the prominent midrib green, the margins whitish. Corolla-tube 15 mm. long, very slender, narrowed upward, the limb nearly 2 cm. broad, 5-parted, the lobes broadly ovate, with narrow, lightly keeled base, the margin crispate. Glands of the calyx small. Disk not seen. Ovaries widely separated and filiform, the styles separate for some distance at the base, the entire pistil about 5 mm. long. Stigma relatively large, annulate. Stamens not seen. Immature follicle two thirds as long as broad, oval, obtuse and nearly elliptic, thick, densely short-tuberculate. Apparently only one follicle develops.

Huachi, 3,000 feet, *O. E. White,* August 21, 1921 (*no. 461*). "A tree, 15 feet high, in forest shade, the flowers white and fragrant." Also collected on the Iniquia River, 2,500 feet, *H. H.*

Rusby, September 21, 1921 (*no. 753*). Species near *T. crispiflora* K. Schum.

Echites rigida

Glabrous. Stems rather stout, reddish-purple. Petioles 1 to 1.5 cm. long, dilated at the base, the interpetiolar lines strong. Blades to 9 cm. long and 4 cm. wide, subelliptic, minutely mucronate, thick, deep-green, the midrib prominent beneath, the slender secondaries about 10 or 12 on each side, widely spreading, straight, with the ends upcurved, connected by the tertiaries. Cymes short-peduncled, bifurcated, densely flowered, the rachis strongly nodose. Pedicels about 1.5 cm. long, upwardly thickened and angled. Calyx about 5 mm. long, divided about midway, the tube cupulate, thickish like the ovate obtuse lobes. Corolla-tube about 12 mm. long, rather stout, sharply constricted at about the middle, the limb rotate, 2 cm. broad, the lobes broad and rounded. Calyx-tube lined with a ring of 10 broadly ovate green scales which are about twice the height of the 5-lobed black disk, the latter nearly equaling the ovaries. Corolla naked within. Stamens attached at the constriction of the tube, the anthers sessile, 4 mm. long, slightly sagittate.

Rurrenabaque, 1,000 feet, *M. Cardenas,* January 25, 1921 (*no. 2042*). Species very near *E. Sanctae-crucis* S. Moore.

Echites bracteosa

Scabrous, with the exception of the lower leaf-surfaces, which are softly tomentellate between the principal veins. Branches slender, climbing, terete, reddish. Petioles 5 to 10 mm. long, broad. Blades 7 to 10 cm. long, 3 to 5 cm. broad, oval or ovate, with very slightly cordate base and shortly acuminate and very acute summit, entire, thickish, the upper surface deep-green, with the venation mostly impressed, scabrous, the lower surface softly tomentellate, gray-brown, the slender reddish midrib and secondaries lightly prominent, the latter about 8 on each side, ascending and connecting near the margin. Raceme simple, stoutly peduncled, densely flowered, becoming secund, the pedicels articulated into slightly cup-shaped depressions. Young buds concealed by the imbricate bracts, which are about 1.5 cm. long, narrowly lanceolate and attenuate. Pedicels extremely short. Calyx-tube 2 mm. broad and not so long, campanulate with slightly contracted summit, the teeth about 2 mm. long, subulate, attenuate. Corolla-tube proper scarcely as long as the calyx, the cylindric throat 3 cm. or more long, curved, the middle

third gradually contracted, then suddenly distended by the anthers and again contracted. Open flowers not seen, the lobes in the mature bud 7 mm. long. Dissection material wanting. Young follicles nearly 2 dm. long, slender, moniliform.

Ixiamas, 800 feet, *O. E. White,* December 11, 1921 (*no. 1142*). "A slender, woody vine in marshes. Flowers yellow, lined faintly with red on corolla-lobes." This plant is closely related to *Echites* or *Mandevilla boliviana,* and also *M. tenuicarpa.* It is probable that none of the three belongs to either of these genera. The heterogeneous aggregation of species now grouped in "*Echites*" undoubtedly comprises several good genera, and any reference of the species of the *E. boliviana* group to either genus must be regarded as provisional.

Dipladenia rotundifolia

Tomentose throughout. Stems simple, erect, to nearly 1 meter high, terete, leafy, the upper and lower leaves smaller, the base bearing a few roundish, scale-like leaves. Petioles almost wanting. Largest blades about 8 cm. long, rotund, subcordate, the summit usually very shortly mucronate, often emarginate; more or less ferruginous beneath, where the midrib is prominent. Secondaries 10 or 12 on each side, strongly falcate, more or less connected by crooked tertiaries. Flowers few, in a long-peduncled terminal raceme. Bracts very small, subulate, rigid. Pedicel stout, erect, terete or angled above, about 1 cm. long. Calyx deeply parted, the spreading rigid lobes about 5 or 6 cm. long, ovate, the strong midrib terminating in an awn-like summit. Corolla rose-colored, the tube 1 cm. long, 3 mm. broad, slightly dilated above, the throat infundibular, 3 cm. long, 1 cm. broad at the middle, the limb 4 or 5 cm. broad, the 5 lobes broad and rounded. Dissection material wanting.

Ixiamas, 800 feet, *O. E. White,* December 16, 1921 (*no. 1144*). "An herb, 3 to 4 feet high, with milky juice, growing in full sunshine, on pampas, in sandy loam. Not common." Species very near *D. tetradenia* Rusby.

Rhabdadenia mamorensis

Glabrous. Stems slender, strongly twining. Petioles slender, 5 to 10 mm. long. Blades to 1 dm. long and 2 cm. wide, mostly divaricate. Base cordate, with short and narrow sinus

and obtuse and slightly incurved lobes. Summit long and finely acuminate and acute. Midrib rather stout, prominent on both sides, the secondaries slender, about 15 on each side, widely spreading, connected at some distance from the margin, the remaining venation loosely anastomosing. Peduncles axillary, mostly about half as long as their leaves, mostly one- or two-flowered. Sepals nearly distinct, erect, 8 or 9 mm. long, 1 to 1.5 mm. wide, lanceolate, attenuate, the midrib rather stout. Corolla rose-purple, 6 to 7 cm. long, the tube a little longer than the calyx and 1 to 1.5 mm. wide, abruptly dilated into the throat, which is 1 cm. broad and gradually expands into the limb, which is campanulate and 3 or 4 cm. broad at the mouth. Anthers sessile, attached at the summit of the tube, 4 mm. long, whitish, lanceolate, acute. Style filiform. Stigma very small.

Trinidad, 800 feet, *M. Cardenas,* March 4, 1922 (*no. 24, special*). A specimen collected near Reyes, 1,000 feet, *O. E. White,* October 27, 1921 (*no. 1522*) exhibits slight differences in calyx, etc., but probably pertains to this species.

MACROPHARYNX gen. nov.

Calyx deeply 5-parted, the lobes narrow, attenuate, the base within indefinitely glandular. Corolla salver-form, the tube short, cylindraceous, thickened, contracted above, the throat elongated, infundibular, without scales or annulus, the lobes ample, dextrorsely obtegent, not contorted. Anthers sessile, attached at the summit of the tube, projecting into the throat, and forming a cone about the stigma, the adnate filament bearing a gland-like enlargement on the inner surface. Anther terminating in a long, acuminate, rigid appendage, the base sagittate and bearing inflexed, rigid, acute caudae. Disk annular, of 5 coherent lobes. Ovaries closely approximate but distinct. Stigma bearing, just below the middle, a ring of 5 white or greenish distinct spreading appendages, and at the summit several unequal aristae. Fruit unknown.

A stout, high-climbing vine with hollow stems. Leaves opposite, ample, the interpetiolar lines very stout. Racemes axillary, simple, densely flowered, strongly nodose, clothed, like the pedicels and base of calyx, with elongate narrow bracts, sometimes simulating a double calyx. Flowers large, white, fragrant.

Genus apparently allied to *Urechites.*

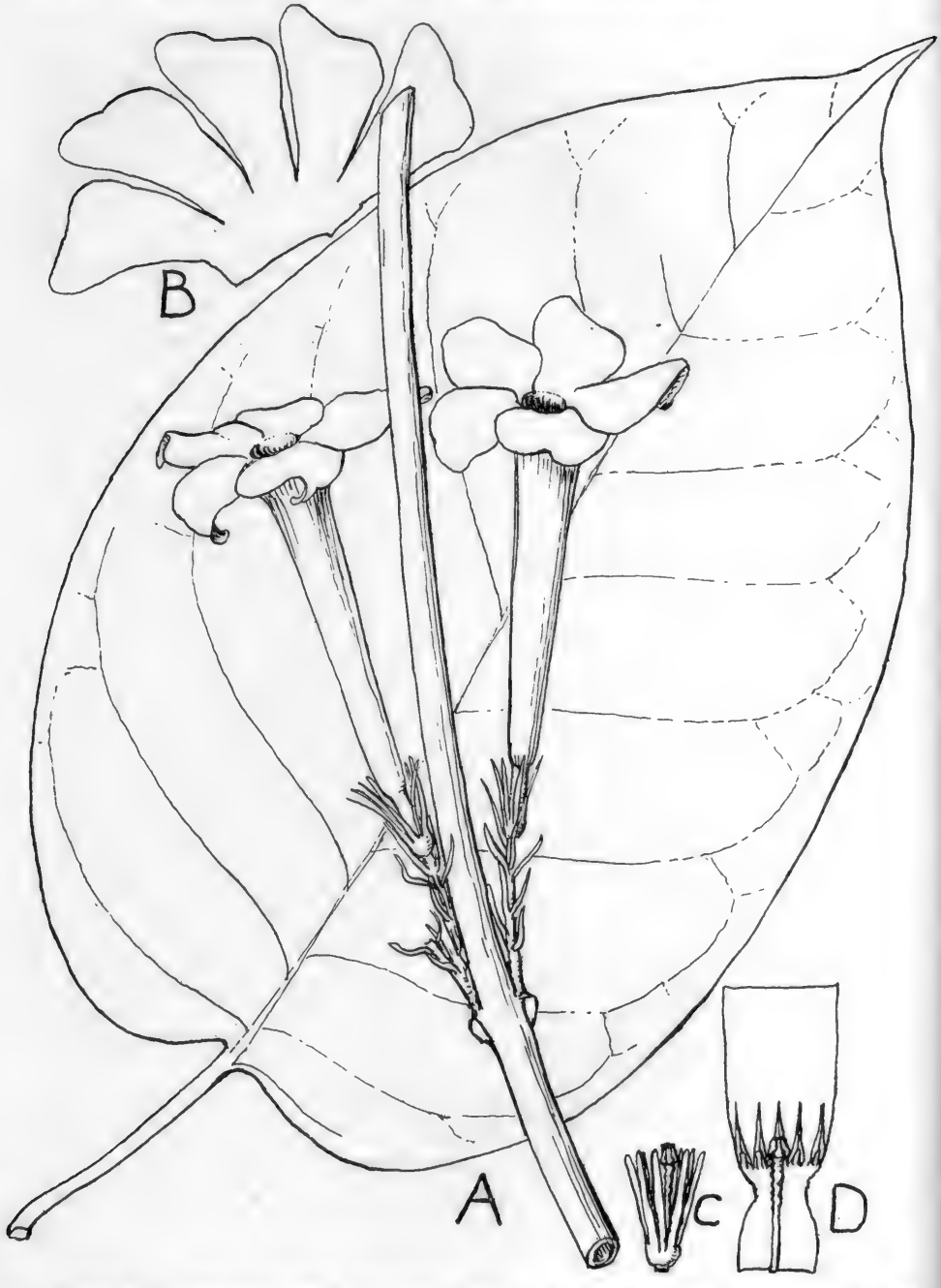

FIGURE 6. *Macropharynx fistulosa* Rusby. A, leaf and hollow stem, with racemes reduced to solitary flowers; B, inner face of limb of corolla; C, calyx with five bracts resembling double calyx; D, stamen-attachment at base of throat, with stigma in place.

Macropharynx fistulosa

Tomentellate throughout. Internodes very long, fistulous. Petioles to 4 or 5 cm. long, broad, the margins involute, ciliate. Blades to 2 dm. long and nearly as broad, ovate with shallowly cordate and often oblique base and mucronate summit, entire, thin, deep-green and sparsely tomentellate above, where the mid-rib is channeled, ferruginous-tomentellate beneath, where the broad midrib and secondaries are prominent, the secondaries opposite, about 10 pairs, widely spreading and lightly curved, the remaining venation obscure. Racemes axillary, few-flowered, the rachis roughly nodose. Pedicels slender, 1 or 2 cm. long, clothed with numerous bracts which are unequal and 1 to 2 cm. long, sinuous, narrowly linear and attenuate, and extending to and sometimes upon the base of the calyx. Calyx truncate at the base, deeply parted, the lobes similar to the bracts, but a little wider. Corolla-tube 12 mm. long, narrower than the infundibular throat, which is 2.5 cm. long the limb 3 cm. or more wide, the lobes broad and rounded. Anthers 9 mm. long, the basal lobes setaceous, 2 mm. long. Ovaries 1.5 mm. long, twice as long as the disk. Style filiform.

Rurrenabaque, 1,000 feet, *M. Cardenas,* December 1, 1921 (*no. 1894*); and at same place, *O. E. White,* January 30, 1922 (*no. 2360*). Mr. Cardenas says "Flowers white, fragrant." Mr. White says " 'Claro bejuco'. A vine to 30 or 40 feet, or more, on trees. Flowers greenish-cream, with faint red tinge on petal-lobes. Flowers have a very strong clove-like odor." The flowers of no. 2360 are smaller and somewhat differently proportioned, and may possibly represent a second species.

Prestonia cornutisepala

Tomentose throughout. Stems elongate, stout, terete. Petioles 1 or 2 cm. long, stout and broad, the margins involute, slightly peltately attached, but the base of the blade adnate. Blades to 1.5 dm. long and more than 1 dm. wide, ovate with broadly rounded base and abruptly very short-acuminate and acute summit, entire, thin, the upper surface deep-green, very shortly, densely, closely and finely tomentellate, the lower surface strongly ferruginous-tomentose, with the stout midrib and secondaries and the finer venation all prominent. Secondaries about 12 on each side, mostly subopposite, widely spreading and falcate at the ends, connected by very numerous crooked terti-

aries, the finer venation strongly anastomosing. Cymes opposite the leaves, the second leaf of the pair wanting, shortly and very stoutly peduncled, compound, very densely flowered. Flowers sessile or nearly so. Bracts nearly 2 cm. long, shaped like the leaves. Calyx parted to the base, the lobes oval, about 8 mm. wide, keeled on the inner face, the extremity of the keel thickened, extended into a short indurated acute cusp and bearing a short inflexed awn, the base bearing 5 ovate pilose scales, 4 or 5 mm. long, their summits fimbriate. Corolla-tube about as long as the calyx, 6 or 7 mm. wide, the limb more than 2 cm. wide, the lobes large, rounded. Corolla bearing a strongly thickened ring at the base of the lobes. Only one ligule seen, this attached some distance below the ring. Filaments slender, about half the length of the anthers, which are 6 mm. long, short-acuminate, sagittate, the basal lobes acute, about 1 mm. long. Disk nearly twice the length of the ovaries, of 5 more or less connate, equal scales, which are obtuse, slightly notched at the summit, and furrowed down the back.

Ixiamas, 800 feet, *M. Cardenas,* December 17, 1921 (*no. 1928*). Species very near *P. latifolia* Benth.

Prestonia cephalantha

Entire plant, with the exception of the upper leaf-surfaces, densely clothed with a short yellow tomentum. Branches elongated, twining, stout, terete, with elongated internodes. Petioles 1 to 2 cm. long, very stout. Blades to 1.5 by 1 dm., ovate, acute, with rounded base, entire, thick, above very minutely papillose-hairy and pilose on the veins, which are narrowly impressed, all the venation stoutly prominent beneath, the secondaries 10 or 12 on each side, widely spreading, the ends up-curved to connect in a marginal line, and connected by numerous tertiaries, the finer venation finely and strongly anastomosing. Inflorescence capitate, densely many-flowered, the heads about 5 cm. broad, shortly and stoutly peduncled. Pedicels 5 mm. long, very thick, hirsute, like the calyx and corolla. Calyx parted almost to the base, the tube subrotate, the lobes about 12 mm. long, oval or ovate, acute or mucronate, thick. Scales 4 mm. long, erect, lance-ovate, acute, densely hirsute. Disk annular, very short. Corolla salver-form, the tube 15 mm. long, about 4 mm. broad, the lobes about 1 cm. long, suborbicular. Anthers shortly exserted, 5 mm. long, the basal lobes short, narrow, very acute. Ovaries blackish, stout, shorter than the scales.

Ixiamas, 800 feet, *M. Cardenas,* December 17, 1921 (*no. 1928*). "Flowers yellow. Growing in sandy loam, in sunshine."

Asclepiadaceae

Tassadia rhombifolia

Minutely downy, the leaf-surfaces minutely papillose, the papillae bearing extremely short hairs. Branchlets very slender. Petioles 2 or 3 mm. long. Blades (only the small upper ones seen) to 3 cm. long and more than half as wide, rhomboidally ovate or oval with acute base and very abruptly short-pointed apiculate summit, thickish and rigid, yellowish-green, the venation obscure and anastomosing to form a narrow marginal band. Midrib bearing one or two minute glands near the base on the upper surface. Flower-branchlets very short, bearing the cymes somewhat crowded, the cymes 1.5 cm. broad, about 10-or 12-flowered. Mature flower-bud 4 or 5 mm. long. enlarged at base and summit, obtuse. Calyx campanulate, lobed about half way, the lobes obtuse. Corolla-tube urceolate, about a third the length of the lobes, which are 3 mm. long. Crown about as long as the corolla-tube, a little longer than the stamens, the ligules narrow but obtuse. Beak of the stigma about half as long as the corolla-lobes, distinctly 2-cleft.

A small twig, bearing three leaves and several cymes was collected on the Mulford Expedition, without locality or date. It may bear the number *208A*. It was probably secured in the vicinity of Canamina, at 3,000 or 4,000 feet altitude.

Tassadia Hutchisoniana

Appearing glabrous, but with an extremely fine and minute puberulence. Stems slender, terete, finely striate. Petioles about 5 mm. long, broad, frequently twisted or curved, the margins involute. Blades to 1 dm. long and 4 cm. wide, oblanceolate, with acute or obtusish base and very abruptly acuminate summit, the acumination acutely mucronate; thick and rigid, deep-green but slightly gray above, pale gray-green beneath, bearing a pair of small brown glands at the base of the midrib on the upper surface, the venation obscure, the secondaries 8 or 10 on each side, forking a little beyond the middle. Panicles sparingly branched, the branches slender, the cymes not approximate, mostly less than 1 cm. broad, mostly 5- to 7-flowered. Mature flower-buds 2.5 mm. long, lanceolate, obtuse, the basal half somewhat enlarged. Calyx-lobes nearly as long as the corolla-tube, narrowly lanceolate, acute. Corolla-tube urceolate, about a third as long as the narrow lobes. Divisions of the crown

setaceous, nearly as long as the anthers. Beak of the stigma equaling the corolla-lobes, the summit obscurely 2-lobed.

Huachi, 1,800 feet, *O. E. White,* August 15, 1921 (*no. 966*). "A woody vine, to 12 feet, growing in damp sandy loam in shady forest, the flowers creamy white." Species dedicated to Mr. R. H. Hutchison, the efficient secretary of the Mulford Expedition.

Funastrum fragile

Gray-tomentellate throughout. Stems very slender, terete, finely costate. Petioles to 1 cm. long, slender, mostly twisted. Blades to 5 cm. long, 2.5 cm. wide, ovate, with lightly cordate base, acute at the summit, with a very slender acute beak 3 or 4 mm. long, very thin, sparingly pubescent above, more so beneath, the midrib strong, reddish-green, the secondaries 10 or 12 on each side, divaricate, forking and connecting near the margin, the venation coarsely anastomosing. Peduncles short, densely many-flowered. Pedicels 15 mm. long. Calyx 7 or 8 mm. broad, deeply lobed, the lobes ovate, acutish. Corolla rotate, 2 cm. broad, deeply lobed, the lobes ovate, obtuse, ciliate. Outer crown adnate to the corolla-base, with a thickish sinuate margin. Inner crown of 5 thin scales, which are a half longer than the stamens, ovate, obtuse, plane. Anthers nearly 2 mm. long, the basal membranes conspicuous, the inflexed terminal appendages short and broad, auriculate at the base. Corpuscles small, rounded, the pollinia oblong, more than 1 mm. long, lightly curved.

On the River Ibon, 500 feet, *O. E. White,* February 23, 1922 (*no. 2088*). "Climbing bushes along water-side in full sunshine. Calyx greenish-cream color; corolla white."

Funastrum lanceolatum

Densely and softly white-pubescent, with spreading hairs. Stems very slender, twining, terete. Petioles 2 or 3 mm. long, broad, tomentose, like the nodes. Blades to 4 or 5 cm. long and 1.5 cm. broad, varying from lanceolate to oblong or slightly oblanceolate, with rounded base and acutely mucronate summit, thin, lightly puberulent above, where the principal veins are lightly prominent, tomentellate beneath, the secondaries 12 or 14 on each side, almost divaricate, connecting at the margin. Peduncles unequal, mostly elongate, slender, loosely several- to many-flowered. Pedicels slender, 2 or 3 cm. long. Calyx 8 mm.

broad, deeply 5-parted, the lobes ovate, acute, slightly concave. Corolla puberulent, rotate, 1.5 cm. broad, the lobes ovate. Outer crown adnate to the corolla, short, with a very narrow membranaceous free margin. Inner crown of 5 scales which are a little longer than the anthers, obovate, obtuse, plane, membranaceous. Anthers 2 mm. long, the basal membranaceous appendages conspicuous, the inflexed apical membranes large, very broad. Stigmatic beak nearly 2 mm. long, conic, dark-brown, obscurely 2-lobed. Corpuscles of the pollinia large. Pollinia oblong, more than 1 mm. long, lightly curved.

Trinidad, 700 feet, *M. Cardenas,* March 6, 1922 (*no. 2, special*). Species peculiar among its Bolivian relatives in having non-cordate leaves.

Vincetoxicum cuspidatum

(Fruiting specimen.) Stems twining, stout, sulcate, setose, or tomentose in places. Only the small uppermost leaves seen. Petiole 5 mm. long, stout, reddish, like the principal veins. Blade 5 cm. long, 3 cm. wide, obovate with slightly cordate base and rounded or retuse summit, the midrib extended into a short stout cusp; deep-green, both surfaces tomentose, the venation not prominent, the secondaries about 5 or 6 on each side. Peduncle of the mature follicle to 4 or 5 cm. long, stout, strongly setose-hispid. Follicle 8 cm. long, 3 cm. broad, ovoid, the pericarp thick and coriaceous or ligneous, brown. Prickles stout, straight or slightly curved, pungent, about 3 mm. long, laterally flattened. Seeds dark-brown or blackish, 5 to 7 mm. long and nearly or quite as broad, obovate, the summit truncate and usually lightly dentate, a longitudinal ridge upon the side.

Without data as to locality or season. Species very near *V. ellipticum* Rusby.

Roulinia Mannii

Younger portions and inflorescence gray-pubescent. Stems slender, twining. Petioles to 3 cm. long, slender, the margins involute. Blades to 7 cm. long and 4 cm. wide, ovate, with cordate base, the sinus deep and narrow, the basal lobes rounded, and with abruptly short-acuminate and acute summit, very thin, very minutely papillose on both surfaces, with very short appressed hairs, the slender venation conspicuous, the secondaries 7 or 8 on each side, the fine venation scanty. Peduncles longer than their petioles, the flowers racemose at the upper part, the pedicels unequal, the longest nearly 1 cm. long, slender. Calyx

rotate, deeply 5-parted, the lobes 3 mm. long, narrowly ovate, acute, membranaceous. Corolla rotate, deeply 5-parted, the lobes 5 mm. long, 3 mm. wide, lanceolate, acute. Ligules of the crown half as long as the corolla-lobes, thin and membranaceous, their breadth at the summit about equaling their length, narrowed to the base, lightly 4-crenate and bearing from a notch in the center an abruptly inflexed terminal ligule. Stamens shorter than the crown, bearing short broad inflexed white terminal appendages. Corpuscle small, rounded, the pollinia oval, short and broad. Follicle 8 cm. long, slender, long-acuminate, glabrous.

Trinidad, 700 feet, *M. Cardenas,* March 8, 1921 (*no. 9, special*). Species dedicated to Dr. Wm. M. Mann, the learned and industrious entomologist of the Expedition.

Gothofreda macroglossa

Softly pubescent with spreading white hairs. Stems to 5 dm. or more high, erect or ascending, slender, simple, terete. Petioles 4 mm. long, slender. Blades to 4 cm. long and 1.5 cm. broad, lanceolate with slightly cordate base and mucronate acute summit, entire, softly gray-tomentellate on both surfaces, the stout red midrib prominent beneath, the secondaries 6 or 8 on each side, crooked. Umbels terminal and axillary, solitary, simple, rather dense, on peduncles much less than half the length of their leaves. Pedicels 2 or 3 mm. long, subtended by setaceous bracts. Calyx 5-parted almost to the base, the lobes regularly attenuate from the narrow base. Corolla-tube very short, crateriform, the lobes 6 mm. long, ligulate, acuminate from the base, obtusish, recurved and twisted. Corona of 5 distinct ligules, slightly adnate to the base of the stamen-tube, 3 or 4 mm. long, linear and slightly wider near the summit, erect, not appendaged. Anther appendages white, about 1 mm. long, oval, obtuse. Styles 8 mm. long, united two thirds of their length, filiform. Follicle 6 or 7 cm. long, narrowly lanceolate, slightly curved, tomentellate.

Reyes, 1,000 feet, *H. H. Rusby,* September 26, 1921 (*no. 1324*).

Gothofreda consimilis

Densely pilose, with divaricate white hairs. Stems to 5 dm. high, erect or ascending, simple, slender, terete. Leaves subsessile, to 4 cm. long and nearly 2 cm. wide, lance-oblong with

lightly cordate base and acute or slightly mucronate summit, entire, densely and softly pubescent on both surfaces, the venation rather stout but inconspicuous. Umbels solitary in the axils, mostly simple, rather dense on erect peduncles shorter than their leaves, mostly fifteen or fewer-flowered, the pedicels 3 or 4 mm. long, subtended by small setaceous bractlets. Corolla-tube nearly hemispheric, 2.5 mm. long, the lobes 5 mm. long, lanceolate, obtuse, recurved and twisted. Corona of 5 erect distinct lanceolate obtuse pilose entire ligules, 3 to 4 mm. long, unappendaged and adnate to the lower half of the stamen-tube. Anther-appendages erect, connate midway, thickened and hardened. Styles 5 mm. long, united half way, pilose, the branches slightly flattened.

Reyes, 1,000 feet, *H. H. Rusby,* September, 1921 (*no. 1995*-A). Very near *G. macroglossa,* from which it differs in the higher adnation of the corona, the longer corolla-tube, the very distinctive indurated anther-appendages and the shorter and less united stouter styles. Both species, together with *G. Martii,* grow in open grassy places, the plants scattered singly amidst the grass. *G. macroglossa* is rather more inclined to grow in partially shaded places.

Gothofreda Pearsoni

Softly white-pubescent. Stems elongate, twining, terete, rather stout. Petioles to 4 cm. long, flattened on the upper surface, reddish, like the principal veins of the lower surface. Blades to 9 cm. long, and half as broad, ovate, cordate with a deep and narrow sinus and rounded lobes, abruptly acuminate with attenuate apex, thin, softly pubescent, especially beneath, with 4 pairs of basal nerves in addition to the midrib sharply prominent beneath. Cymes sessile in the axil, mostly about 5-flowered, the pedicels about 4 mm. long, slender. Calyx-lobes 3.5 mm. long, subulate, attenuate, green. Corolla more than twice the length of the calyx, the lobes acuminate, tomentose. Ligules of the crown about 1 mm. long, erect, ovate, obtuse. Appendages of the stamens longer than the anthers, subulate, acuminate, erect. Corpuscles nearly 1 mm. long, the pollinia shorter, narrow. Beak of the stigma parted two thirds of the way, the branches extending nearly the length of the corolla, stout, puberulent.

Rurrenabaque, 1,000 feet, *M. Cardenas,* January 9, 1922 (*no. 2035*). Species dedicated to Dr. Pearson, the talented ichthyologist of the Expedition.

Nephradenia pendula

Lower portion of stem very minutely scabrellate, and the peduncles very minutely puberulent. Stems 4 to 6 dm. high, erect, simple, slender, green, finely costate, the internodes a little longer or a little shorter than their leaves. Leaves opposite, 2 to 4 cm. long, appearing 1 to 2 mm. wide in their revolute state, sessile, linear or lance-linear, erect, rigid, very acute and nearly pungent, thickish, entire, the margins strongly revolute, strongly keeled, the numerous secondaries elevated so as to give a nodose feeling to the touch. Peduncles in one, occasionally in both axils, recurved, filiform, 2-flowered, 7 or 8 mm. long, a little longer than the pedicels, which are slightly unequal, pendulous, minutely bracted at the base, sharply angled or narrowly winged, thickened at the summit. Calyx rotate, 5 mm. broad, membranaceous, greenish, deeply 5-lobed, the lobes equal, ovate, obtusish. Corolla white, broadly campanulate or nearly hemispherical, deeply 5-lobed, the lobes oval, obtuse, 7 mm. long. Crown of 5 scales, which are erect and adnate by their face to the entire length of the stamen-tube, thin, rigid, the lower portion bearing a broad, thick keel from the center. Pollinia above the level of the stigma, horizontal, borne on very short pedicels close to the short erect corpuscle.

Ixiamas, 1,000 to 1,500 feet, *M. Cardenas,* December 15, 1921 (*no. 1907*). "In sunny places, in clay-soil, on pampa. Plant 2 to 3 feet high, with white flowers."

Convolvulaceae

Jacquemontia bifurcata

Tomentellate throughout. Stems slender, tough, terete, twining. Petioles to 8 mm. long, rather stout. Blades to 4 cm. long and half as wide, oblong, with rounded base and blunt, apiculate summit, entire, thick, drying brownish, softly tomentellate on both surfaces, the secondaries about 7 or 8 on each side, ascending, nearly straight, strong and prominent beneath, like the midrib. Peduncles longer than the leaves, densely many-flowered at the summit, mostly bifurcated. Calyx 4 mm. long, the sepals subequal, the three outer a little wider, ovate, acute or obtusish, thickish. Corolla about twice as long as the calyx, nearly 1 cm. broad, bright-blue. Dissection material wanting.

Espia, 3,500 feet, *H. H. Rusby,* July 20, 1921 (*no. 113*).

Jacquemontia agricola

Densely pubescent with short, coarse, divaricate hairs and apparently clammy. Stems elongate, slender twining. Petioles to 1 cm. long, slender. Blades to 3 cm. long and half as wide, ovate, with rounded or subcordate base and acuminate and acute summit, thickish, pubescent, especially beneath, the secondaries, about 6 on each side, impressed above, thick and prominent beneath. Peduncles elongate, rigid, the numerous flowers crowded at the summit and linear-bracted. Sepals 6 to 8 mm. long, the three outer much larger, lanceolate and long-attenuate. Corolla lilac, campanulate, about 1 cm. long, shortly 5-lobed, the lobes mucronate. Stamens about half the length of the corolla, inserted at its base, the filaments filiform, the anthers oval, obtuse. Style exceeding the stamens, the stigmas two, broadly ovate, compressed. Mature capsule shorter than the sepals.

A weed in cultivated ground, at Canamina, 4,000 feet, *H. H. Rusby,* July 15, 1921 (*no. 80*).

Hydrophyllaceae

Nama longifolia

Calyx sparsely white-pilose, the younger stems and upper surface of the young leaves very minutely scabrate. Stems a meter or more high, erect, branched above, pale-green, nearly glabrous, the branches mostly short, ascending. Leaves sessile, to 1 dm. long and 1.5 cm. wide, oblanceolate, with long-acuminate base and acute or obtusish summit, entire, thin, pale-green, the midrib prominent on both sides, more so beneath, the remaining venation very slender, the secondaries strongly ascending. Flowers densely racemose at the ends of the branches. Pedicels slender, shorter than the flowers. Bracts lanceolate, acuminate, unequal, some longer than the calyx. Sepals 4 mm. long, 1.5 or 2 mm. wide, ovate, acute, with a strong midrib, sparsely clothed with long bristly hairs, slightly united at the base. Corolla longer than the sepals, parted almost to the base. Stamens attached to the base of the corolla and about equaling the corolla, the lower half of the filaments abruptly and broadly dilated. Ovary subglobose, 1 mm. broad, glabrous, bearing a small blackish tubercle from which the styles arise. Styles curved, flattened, broader above, the stigma blackish. Capsule globose, 5 mm. broad, light-brown, shining, bearing the persistent styles.

Ixiamas, 800 feet, *O. E. White,* December 16, 1921, (*no. 1146*). "Growing in the edges of ponds, in sunshine, the flowers light-blue. Very rare." The species is related to *N. caroliniana.*

Verbenaceae

Lippia venosa

Densely and very shortly gray-tomentellate throughout, the long slender branches somewhat quadrangular and sulcate. Petioles 4 to 8 mm. long, the blades 3 to 5 cm. long, 1 to 2 cm. broad, ovate with abruptly acuminate base and long-acuminate and acute summit, shortly crenate-dentate, thickish, light-green above, gray beneath, rather strongly bullate above by the impressed venation, which is very prominent and stout beneath, the strongly ascending secondaries about 5 on a side, connected by a strong reticulation. Heads solitary in the axils, the slender peduncles half as long as their leaves, or longer, mostly nearly 1 cm. broad. Bracts ciliate, broadly ovate, acute. Calyx broadly campanulate, 2-fid, the divisions broader than long. Corolla-tube minutely puberulent, incurved, 5 mm. long, contracted just above the base, then gradually dilated to three times that width, and lightly contracted at the summit, the limb 5 mm. broad, the upper lip very slightly retuse, the lower with 3 rounded lobes which are rather broader than long. Shorter anthers reaching to about the middle of the tube.

Espia, at the head of the Bopi River, about 3,500 feet, *H. H. Rusby,* July 20, 1921 (*no. 99*); Canamina, 4,000 feet, *O. E. White,* July 21, 1921 (*no. 268*).

Petrea fragrantissima

Scabrous throughout, the branches stout, terete, light-gray. Petioles 1 to 1.5 cm. long, stout, the margins strongly involute. Blades 12 to 18 cm. long, 7 to 12 cm. broad, with rounded base and obtuse or acutish summit, entire, thickish, and rigid, deep-green, the venation lightly prominent above, sharply and strongly so beneath, the secondaries 12 to 15 on each side, crooked, strongly anastomosing at some distance from the margin, and connected by a very loose angular anastomosis of the tertiaries. Panicles pedunculate, loosely branched, elongated, like their branches, loosely or densely flowered, recurved or pendulous, the flowers of a deep-blue color and very fragrant. Bracts equaling or exceeding the flowers, lance-linear, acuminate and acute. Flowering pedicels 1.5 mm. long, in fruit 5 to 8 mm., very slender. Tube of flowering calyx 5 mm. long, the narrow crispate lobes a little longer in fruit, the tube little longer, but the lobes 2 cm. long by 1 cm. broad, obovate with rounded summit, thin and veiny. Ligules of the calyx thick, broader than long,

ovate, acutish. Filaments stout, the anthers sagittate, minutely mucronate. Style very stout.

Near Rurrenabaque, 1,000 feet altitude, *H. H. Rusby,* October, 1921 (*no. 860-A*). A stout, high-climbing vine in the forest, where *P. bracteosa* also grows, but the latter is not fragrant. This plant would be a valuable acquisition for greenhouse culture.

Callicarpa minutiflora

Gray-scurfy throughout, except the upper leaf-surfaces, which are deep-green with gray-scurfy midrib and very small scattered stellate patches. Stem tall and slender, obscurely angled. Petioles 1.5 to 2.5 cm. long, stout, the blades 1 to 2 dm. long, 5 to 10 cm. broad, lance-ovate, with somewhat cuneate base and long-acuminate and attenuate summit, very lightly sinuate-dentate, very thin, the slender venation slightly prominent beneath, the strongly falcate-ascending secondaries about 6 to 8 on a side, connecting close to the margin and connected by rather numerous very slender tertiaries. Cymes shortly and stoutly peduncled, loosely branched, the branchlets densely flowered. Calyx turbinate-campanulate, 1.5 mm. long and broad, the margin lightly sinuate. Corolla twice the length and breadth of the calyx, campanulate, lobed half way. Exserted portion of stamens twice the length of the corolla. Style about equaling the stamens, and stouter.

Rurrenabaque, 1,000 feet, November 24, 1921 (*no. 1768*). Species near *C. acuminata,* H. B. K., and may possibly prove to be only a variety of it.

PSEUDAEGIPHILA gen. nov.

Calyx campanulate, the limb normally 4-toothed, the teeth equal and erect, often irregularly 3-toothed, in fruit enlarged and coriaceous, the summit involute. Corolla marcescent, the tube straight, cylindrical, with the summit somewhat enlarged, the limb slightly bilabiate, the upper lip entire or subentire, the lower three-lobed, the lobes smaller than the upper lip. Occasionally, the corolla is 3-lobed. Stamens 4, exserted, the two long ones normally equal, the two short ones frequently unequal, the filaments attached below the throat of the corolla, somewhat flattened, the anthers attached at the back near the base, 2-celled, lightly cordate, oval, the cells parallel. With the occasional 3-lobed corolla, but 3 stamens are present. Ovary

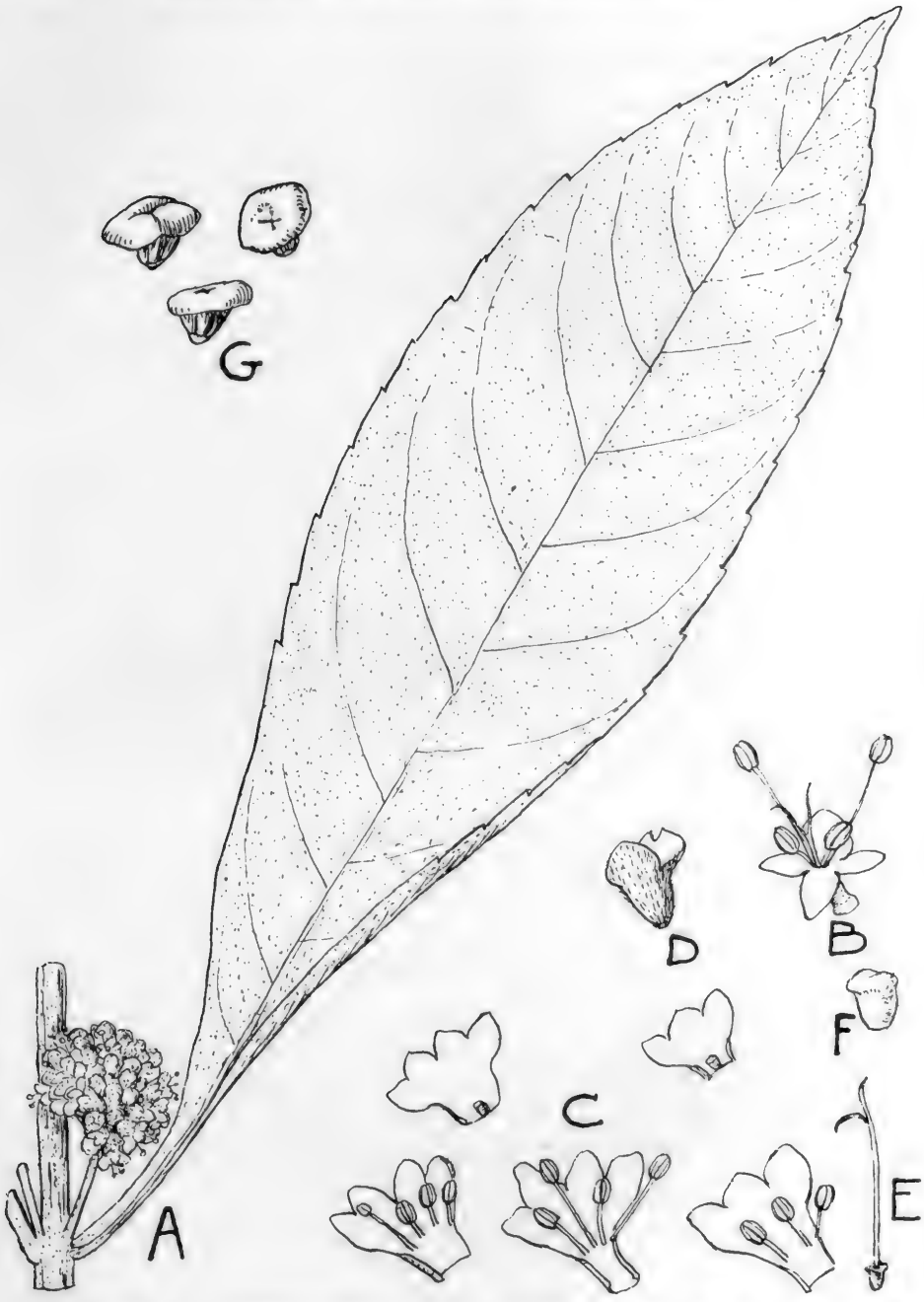

FIGURE 7. *Pseudaegiphila breviflora* Rusby. A, leaf and inflorescence; B, normal corolla and androecium, × 3; C, five figures, showing variation in corolla and androecium, × 3; D, irregularly fissured calyx, × 3; E, pistil, showing recurved appendage to ovary, × 3; F, ovary enlarged, × 6; G, three figures, showing nearly mature fruit, × 6.

hemispheric-turbinate, the truncate summit bearing a marginal recurved membranous annulus. Style exserted, filiform, bifid, the branches elongate, filiform, strongly and widely recurved. Fruit (only partially mature) closely enclosed in the base of the calyx, which is slightly contracted above it, hemispheric-turbinate, the annulus much expanded and recurved so as to conceal the upper part of the fruit, and coriaceous, shining, with concave center. Fruit 2-sulcate and 2-seeded, occasionally 3-sulcate.

A tall perennial tomentellate herb, of the habit of *Aegiphila,* with opposite leaves and small, peduncled, densely flowered compound cymes in the axils.

Pseudaegiphila breviflora

Tomentellate throughout, the indumentum extremely short and dense, brownish, except for the deep-green upper leaf-surfaces. Stems tall and stout, quadrangular and sulcate. Leaves 1 to 2 dm. long, 3 to 6 cm. broad, oblanceolate, acute, gradually tapering into a margined petiole, obsoletely sinuate-serrate, the teeth minutely pointed; thin, the scanty venation very slender, scarcely prominent on either side, the secondaries 8 or 10 on each side, lightly falcate, connected by a very few very fine tertiaries. Cymes solitary in the axils, on peduncles 1 to 2 cm. long, compound, 1.5 to 3 cm. broad, very dense. Calyx nearly 5 mm. long, the obovoid tube about 2 mm. long, the lobes short and broad, obtuse. Corolla little exceeding the calyx, the slender tube half as long as the broadly oval obtuse lobes, the stamens attached below the base of the lobes, equaling or exceeding them in length. Style filiform, the recurved filiform branches about half its length. Upper third of fruit covered by the recurved coriaceous, lustrous light-brown appendage.

Santa Ana de Yacuma, 700 feet, *M. Cardenas,* March 4, 1922 (*no. 16, special*). This peculiar plant exhibits several characters of great interest. No similar carpellary appendage is known to the writer, and its morphological relations are difficult to understand. The irregularity in the lobing of the corolla and the great diversity in stamen-characters suggests abnormal development of some kind, possibly hybridity, a suggestion that is strengthened by the obvious resemblance to both *Aegiphila* and *Callicarpa.*

Vitex pseudolea

Petioles and midribs minutely downy. Petiole very slender, somewhat shorter than the middle leaflet. Leaflets 5, the slender

petiolules 6 to 12 mm. long, the blades 5 to 10 cm. long by 1.5 to 4 cm. broad, the outer successively smaller, oblanceolate, the base regularly acuminate, the summit abruptly short-pointed, acute or obtuse; membranaceous, thin, entire, the midrib and secondaries, about 15 on each side, slender and sharp beneath, the venation strongly reticulate. Cymes lateral, numerous, short-peduncled, few-flowered, the slender pedicels very unequal. Flowers bright-blue, not collected. Calyx of the young fruit crateriform to subhemispherical, lightly 5-nerved and reticulate-veiny, loosely subtending the fruit, the margin shallowly 5-crenate, each lobe bearing a minute mucro. Fruit ovoid or slightly obovoid when young, ellipsoidal when mature, purple-black, oily and sweetish, and of peculiar flavor, and as large as a small olive.

This becomes a good-sized, densely leafy tree, called *Aceituno del monte* (wild olive) and *Anacahuita*. The fruit is greedily eaten by children, and the bark is used in the treatment of rheumatism. Collected in fruit at Rurrenabaque, Bolivia, November 1921. A tree of the same name and supposedly the same was seen in flower at Santa Ana on the Bopi River, three months earlier. It was densely covered with flowers, before the appearance of the leaves (*no 767*). Also collected by Williams at Ixiamas, Bolivia. Species near *V. gigantea* H. B. K., which is a ferruginous-tomentellate species.

Lamiaceae

Hyptis canaminensis

Scabrous, the inflorescence gray-pubescent. Stems erect, tall, slender, apparently simple or little-branched, obtusely quadrangular, the sides sulcate, often red-purple. Petioles 2 to 3 cm. long, slender, subterete. Blades to 8 cm. long and 3 cm. broad, lance-ovate with more or less cuneate base, acuminate and acute, coarsely and sharply serrate, thin, pale-green, shortly gray-hairy and somewhat rough beneath, finely scabrous above, the secondaries 5 to 8 on each side, strongly ascending and nearly straight, slender, prominent beneath. Heads slenderly racemose, the racemes axillary and in a terminal panicle, longer or shorter than their leaves, slenderly peduncled, the lower portion of the rachis leafy-bracted, the racemes interrupted. Heads at length shortly peduncled, 0.5 to 1 cm. broad, according to development, about 5-flowered, the flowers sessile. Calyx about 5

or 6 mm. long, 2 mm. broad, slightly narrowed upward, lightly curved and slightly ventricose, the teeth erect, green, subulate, acute, about 1 mm. long. Corolla somewhat exserted, the tube white, much enlarged at the base, four lobes subequal, oval, obtuse, ciliate, the anterior about as long and somewhat narrower, somewhat narrowed toward the base. Mature nutlets not seen.

Canamina, 4,000 feet, July 15, 1921, (*no. 61* and *62*). "A weed about 3 or 4 feet high, in cultivated ground." Species very near *H. yungasensis* Britton.

Hyptis compacta

Upper leaf-surfaces densely and finely short-strigose, the lower surfaces tomentose and strongly ferruginous. Stems and numerous short branches stout, obscurely angled, deep-purple, coarsely short-pilose, leafy. Petioles to 1 cm. long, stout, broad, dilated at the base. Blades to 6 cm. long and 4 cm. broad, oval, with the base abruptly contracted into the petiole and with obtuse or rounded summit, finely crenate-dentate, very thick, the venation impressed above, the strongly ascending and falcate secondaries 8 or 10 on each side, connected by numerous tertiaries. Heads sessile, crowded at the ends of the branchlets, to 1.5 cm. broad, densely very many-flowered, dark-brown, all in the mature fruiting stage in my specimens, subtended by broadly ovate acute brown bracts which equal or slightly exceed the flowers. Calyx 5 mm. long, 3 mm. broad, the tube campanulate, 10-nerved, the teeth 2 mm. long, triangular-subulate, acute, straight and erect. Nutlets small, ovoid, granular.

On the pampas about Lake Rogagua, 1,000 feet, *H. H. Rusby,* November 4, 1921 (*no.1630*). The same also collected by Steinbach in the upper valley of the Mamore.

Solanaceae

Bassovia minutiflora

Glabrous. Stems apparently herbaceous, terete, flexuous, much branched, the branchlets divaricate or widely spreading, very slender. Petioles to 5 mm. long, slender, continuous with the base. Blades very unequal, from 2 to 8 or more cm. long and 1 to 3 cm. broad, lanceolate, with cuneate base passing gradually into the petiole, obscurely sinuate, very thin, bright-green, the venation very slender, not prominent, the secondaries about 6 or 7 on each side, strongly ascending, lightly curved, the finer

venation obscure. Pedicels pseudo-axillary, solitary, 1-flowered, filiform, nearly 1 cm. long when fully developed. Calyx-tube 1.5 mm. broad, widely campanulate, somewhat 5-angled, the lobes about 1 mm. long, ovate, thickish. Corolla more than 1 cm. broad, deeply 5-parted, the divisions ovate. Stamens nearly equal, 4 mm. long, the filaments a little longer than the anthers, filiform, dilated and slightly connate at the base, the anthers oblong, fully dehiscent longitudinally. Style blackish, about as long as the stamens, sigmoid-curved, the stigma small.

Huachi, 3,000 feet, *H. H. Rusby,* August 21, 1921 (*no. 680*).

Solanum setosicalyx

Branches, petioles, etc., sparsely armed with short, straight divaricate pungent yellow prickles, their bases stout and laterally flattened, their upper portions slender; scabrous with short rigid, pungent white hairs borne on stout papillae. Branchlets woody, very stout, terete, flexuous. Petioles about a fourth of the length of the blades. Leaves to 15 cm. long, and about two thirds as broad, irregularly oval, with very unequal subtruncate base and broad summit, very coarsely sinuately dentate, the teeth 2 or 3 on each side, directed outward, broadly triangular, mostly obtuse, the sinuses of similar form or broader; upper surface deep-green, sharply strigose, the hairs distinct but numerous; hairs of the lower paler surface much shorter but on much larger papillae. Secondaries about 8 to 10 on each side, widely spreading, nearly straight, slightly impressed on the upper surface. Pseudo-racemes lateral, shortly peduncled, more or less recurved, densely clothed, including the calyx, with long straightish coarse pungent hairs. Pedicels, in flower, 1.5 to 2 cm. long, slender. Mature bud 2 cm. long, 1 cm. broad, ovoid, blunt, the calyx nearly half the length, divided nearly to the base, the lobes lance-ovate, attenuate. Corolla apparently pale-violet, tomentellate externally, rotate, when expanded 4 cm. broad, the lobes stoutly ribbed. Stamens 1.5 cm. long, one a little longer than the others, the anthers regularly lance-linear, obtuse or subtruncate, the pores small, looking inward, upward and laterally. Fruit unknown.

A shrub in a coffee plantation at Huachi, 3,000 feet, *H. H. Rusby,* August 30, 1921 (*no. 451*).

Solanum poinsettiaefolium

Apparently unarmed; densely short-tomentose throughout, with gray stellate hairs. Branches woody, ascending, rather

stout, flexuous, terete, gray. Petioles about a fourth of the length of the blades, slender, terete, divaricate or recurved. Blades to 8 by 5 cm., ovate, acute, with oblique obtuse or acutish base, coarsely dentate, with 2 or 3 large teeth on each side, the teeth broadly triangular, blunt and pointing outward, the broad sinuses obtuse or rounded, about as large as the teeth; thickish, grayish-green above, gray and densely tomentose beneath, the venation coarse, prominent, though little elevated beneath, the secondaries about 7 to 9 on each side, diverging at about 45 degrees, little curved but rather crooked, coarsely branching. Pseudo-racemes lateral, the peduncle nodose, as with scars of fallen flowers. Pedicels, in flower, 1 to 1.5 cm. long, slender. Mature bud 2 cm. long, 5 mm. broad at the base, lanceolate, blunt, the summit usually a little oblique, the calyx about a fourth of the length, divided almost to the base, tomentose externally, nearly glabrous within, thin, the tube shortly and broadly campanulate, the lobes ovate, subtruncate and bearing a stout awn about half as long as the body. Corolla tomentose, divided nearly to the base, apparently white, the lobes ovate. Stamens equal, 5 mm. shorter than the corolla, the filaments very short, the anthers lance-linear, tapering regularly from base to summit, the summit lightly curved, truncate, the pores rather large, looking inward and a little upward. Style stout, 2 or 3 mm. longer than the stamens, the summit lightly curved. Fruit unknown.

In copses on the pampas near Lake Rogagua, 1,000 feet, *M. Cardenas,* November 7, 1921 (*no. 1695*).

Solanum arachnidanthum

Armed with very short stout strongly laterally flattened recurved yellow shining pungent prickles. Densely, shortly and harshly tomentellate, with stellate hairs, and of a yellowish gray-green. Branchlets short, stout, flexuous, terete. Leaves to 8 by 2 cm., tapering into a petiole-like base, acutish, or sometimes acuminate, sometimes entire, but usually sinuous, with one to three coarse teeth on each side, thickish, scabrous on both surfaces, the hairs appressed, slender but rigid, the secondaries about 4 on each side, coarse and crooked. Racemes lateral, sessile or short-petioled, few-flowered. Pedicels 5 to 8 mm. long, rather stout. Calyx-tube broadly campanulate, about 2 mm. long by 4 mm. broad, the teeth subulate, about as long as the tube. Corolla, just before opening, 5 cm. long, the summit obtuse, strongly recurved, in flower parted almost to the base, the

segments linear, tomentose externally. Stamens subequal, as long as the corolla, the filaments 2 mm. long, the anthers slender, long-acuminate, the summit recurved, the elongate whitish pores looking inward. Style considerably longer than the stamens, very slender, recurved. Young fruit globose, shining.

Trinidad, 700 feet, *M. Cardenas* (*no. 3, special*). "A shrub 2 feet high, in sandy loam, the flowers white, the fruits black, 5 mm. wide."

Solanum steironematophyllum

Prickles occasional on branches, petioles and midrib. Young leaves, etc., bearing scattered minute stellate hairs, otherwise glabrous. Branches elongated, slender, flexuous, nearly terete, pale-green. Prickles yellow, shining, very small, pungent, nearly straight, terete, or very slightly laterally compressed. Petioles about one fourth as long as the blades, slender, ascending, narrowly channeled above. Blades to 14 by 5 cm., regularly lanceolate with acuminate base and long-acuminate and acute summit, obscurely sinuate, very thin, deep-green, the midrib and secondaries prominent beneath, the secondaries about 10 on each side, slender, strongly ascending, the terminal portions upturned, connected by few crooked tertiaries. Raceme lateral, sessile or shortly peduncled, about 5- to 10-flowered, the peduncle and rachis more or less angled. Pedicels very slender, about 1.5 cm. long, divaricate, becoming reflexed in fruit. Flowering calyx 5 mm. long, the hemispheric tube very short, the lobes narrowly lanceolate. Corolla, just before opening, about 9 mm. long, apparently becoming nearly rotate, deeply parted. Stamens 8 mm. long, slightly unequal, the filaments very short, the anthers lanceolate, the beak about one third of the length, slightly curved, the pores small, terminal, looking upward and a little inward. Calyx slightly enlarging in fruit, the berry nearly globose, about 8 to 10 mm. broad.

(*No. 827.*) Species very near *S. coerulescens* Sendt.

Solanum rogaguense

Sparsely armed with very short stout straight yellowish prickles, which are somewhat flattened laterally. Younger portions and inflorescence very shortly and minutely stellate-puberulent. Branchlets elongate, slender, erect or strongly ascending, green, striate, or angled when young. Petioles to 3 cm. long, slender, sparsely prickly, like the midrib underneath and occa-

sionally above, with slender prickles, at first erect, at length divaricate. Blades to 1 dm. long and 4 cm. broad (the lower probably larger), lanceolate to oblanceolate, acuminate at both ends, acute, sparingly sinuate-dentate, the teeth small, triangular, directed outward, very thin, deep- but dark-green, nearly glabrous above, sparsely and very shortly stellate-hairy beneath, where the slender venation is lightly prominent, the secondaries about 8 or 10 on each side, strongly ascending except at the erect ends. Inflorescence terminal, pseudo-racemose or paniculate, small, few- to many-flowered, the rachis nodose from the fallen flowers. Pedicels to 2 cm. long, nearly filiform, upwardly thickened. Calyx-tube nearly hemispherical, 1.5 mm. broad, the lobes 4 mm. long, subulate, acute. Corolla nearly 1 cm. long, puberulent, apparently white, divided nearly to the base. Filaments very short. Anthers regularly acuminate from the base, the longest 7 mm., the shortest 5 mm. long, the pores looking upward and a little inward.

Near Lake Rogagua, 1,000 feet, *H. H. Rusby* (probably as a part of *no. 827*).

Solanum canaminense

Armed with scattered very small yellow shining strongly recurved prickles which are pungent and slightly flattened laterally, densely soft-tomentose with gray or yellowish hairs. Branches elongated and stout, somewhat flexuous, terete. Petioles 2 to 5 cm. long, recurved-spreading, stout, bearing a few prickles, as does the midrib underneath. Blades 12 to 20 cm. long by 4.5 to 8 cm. broad, oval-ovate, with obtuse or acute base slightly produced into the petiole and obtuse or acutish summit, entire, thickish, deep-green above, with straight white hairs amidst the matted darker ones, paler beneath, with the slender venation conspicuous, crooked and coarsely anastomosing, the secondaries 7 to 10 on each side, strongly falcate-ascending. Cyme terminal, small, dense, branching. Pedicels 5 to 8 mm. long, very stout. Mature bud 12 to 15 mm. long, 5 mm. wide, the calyx two third of the length, the corolla obtuse, angled. Calyx-tube crateriform, 5 mm. wide, the lobes linear-attenuate. Expanded corolla deep-purple, nearly 3 cm. wide, subrotate, densely long-pilose, deeply lobed. Stamens equal, two thirds as long as the corolla, the anthers regularly lanceolate, straight, the pores elongate, looking inward, and a little upward. Style exceeding the stamens, the summit incurved. Fruit not seen.

Canamina, 4,000 feet, *O. E. White,* July 28, 1921 (*no. 408*). "A spreading tree, 10 to 18 feet high, growing in damp shady ravines, associated with *Bocconia.*"

Solanum sassafrideum

Apparently unarmed; densely and shortly ferruginous-tomentose, the tomentum interspersed with longer straight or curved coarse whitish stiff hairs, which also occur on the midrib of the upper leaf-surface, which is strongly and harshly muricate. Branches and branchlets short, very stout, terete. Only the upper leaves seen, there probably being others, much larger. Petioles 4 or 5 cm. long, 4 or 5 mm. thick. Blades broken in my specimen, and their characters imperfectly displayed. They are about 1.5 dm. long and nearly as wide, obovate, with cordate base, its sinus narrow, the summit not seen; margin unequally and irregularly lobed, the lobes blunt or obtuse, sometimes narrowed toward the base; leaf thick, above deep-green and somewhat ferruginous, harshly papillose, beneath grayish-ferruginous and densely short-tomentose, the principal veins coarse and prominent. Principal secondaries 7 or more, at an angle of about 45 degrees, nearly straight, with numerous smaller intermediate ones, which are divaricate. Cyme terminal, dichotomous, broad, densely flowered at the ends of the branchlets, which are deeply ferruginous-tomentose, marked with whitish depressions from the fallen pedicels, which are very short and stout. Mature bud 1 cm. long and half as broad, nearly ellipsoid. Calyx-tube between crateriform and hemispheric, 4 mm. wide, 5-ribbed, the teeth triangular-subulate, longer than the tube, acute, keeled. Corolla tomentose, on both surfaces, whitish, rotate, nearly 2 cm. broad, lobed two thirds of the way, with plicate folds in the sinuses, the lobes ovate, obtuse, 3-nerved, the margins involute. Filaments extremely short, the anthers deep-purple, slightly unequal, about 6 mm. long, oblong or a little narrower above, obtuse, the pores whitish, looking inward and laterally.

Pongo de Quime, 11,500 feet, *O. E. White,* July 12, 1921, (*no. 156*). "A small tree, 12 to 15 feet high, with white flowers, growing in full sunshine."

Solanum pongoense

Unarmed, the young leaves very minutely puberulent. Much branched, the branchlets short, stout, somewhat angled when young. Leaves very unequal, the petioles of the larger ones to

1 cm. long, slender, channeled above. Blades to 3.5 by 1.5 cm., lanceolate, mostly with acute base and obtuse summit, entire, thickish, the midrib and secondaries sharply prominent beneath, the secondaries about 6 on each side, strongly ascending and little curved. Cymes terminating the branchlets, mostly few-flowered, dichotomous. Pedicels 5 to 7 mm. long, filiform, recurved, thickened upward and continuous with the calyx-tube. Flower about 7 mm. long, the calyx nearly a third of the length. Calyx campanulate-turbinate, the lobes about 1 mm. long and broad, obtuse. Corolla bluish-white, pubescent, lobed nearly half-way, the lobes ovate, obtuse. Stamens nearly equaling the corolla, the filaments stout, flattened, two thirds the length of the anther, which is oblong, straight, cordate at the base, truncate, brown, completely dehiscent from the base to the pores, which are rather large, looking inward and upward. Style slightly exceeding the stamens, slender, nearly straight. Fruit depressed-globose, 4 or 5 mm. broad.

Pongo de Quime, 11,000 feet, *O. E. White,* July 5, 1921 (*no. 165*). "A shrub 5 to 10 feet high, common in gulches, near river."

This very strange species well illustrates the aberrant tendencies of the genera of this group. The habit of this shrub is much like that of a *Poecilochroma,* with which it grows, as well as with *Solanum* and *Lycianthes.* Its filament is that of *Bassovia,* but its anther has distinct pores, as well as sutures. Its openly cordate anther-base distinguishes it from any species of any of these genera known to me. On the whole, I think it cannot be separated from *Solanum.*

Lycianthes subfalcata comb. nov.

Brachistus subfalcatus Rusby, Bull. N. Y. Bot. Gard. 8: 117.

Rurrenabaque, 1,000 feet, *M. Cardenas,* November 25, 1921 (*no. 1172*). This collection, made just across the river from the type locality, includes several partly developed flowers, from which the following description is drawn.

Calyx shallowly cupulate, 3 mm. broad, less than 2 mm. high, gray-brown with 10 green nerves, the 10 teeth subequal, very short, triangular. Corolla campanulate, 3.5 or 4 mm. long, deeply parted, the lobes thickish, ovate, obtuse. Filaments less than half the length of the anthers, slender. Anthers 3 mm. long,

ovate, the terminal pores projected slightly above the summit, very small, not open in my specimen, not quite reaching to the end of the corolla. Style blackish, slender, sigmoid-curved, equaling the corolla-lobes.

Accompanying my specimen, and supposed to belong with it, are the remains of a large Solanaceous fruit, resembling the pericarp of *Capsicum baccatum*. When entire, it apparently must have been 3 or 4 cm. long and wide, and I cannot regard its identity as being certain.

Lycianthes viridis

Tomentellate. Stems woody, the branchlets very slender, sulcate, very leafy. Petioles to 2 cm. long, very slender, the margins involute, reddish, like the midrib underneath. Blades to 1 dm. long and nearly 4 cm. wide, lanceolate, abruptly acuminate at the base and regularly acuminate and acute at the summit, entire, thin, deep but bright-green, sparingly puberulent above, tomentellate beneath, the slender venation slightly prominent beneath, the secondaries about 6 or 8 on each side, lightly curved and strongly ascending, the finer venation coarsely anastomosing. Cymes few- or many-flowered, the pedicels filiform, to 3 cm. long when in flower. Calyx-tube 1.5 mm. long and wide, campanulate, the 10 calyx-teeth equal, 4 mm. long, setaceous, mostly incurved at the summit. Corolla 5 mm. long, 8 mm. wide, campanulate, lobed nearly midway. Stamens 5 mm. long, nearly equaling the corolla, the filament and anther about equal in length. Anthers oblong, the summit somewhat incurved. Style simply curved, thickened upward, not equaling the stamens. Fruit not seen.

Meguilla, 3,500 feet, *O. E. White,* July 28, 1921 (*no. 439*). *Otto Buchtien, 317,* from Sirrupaya, Yungas, 2,100 meters, December 1, 1906, is probably the same, although the calyx-teeth are not so long and the corolla is larger.

Scrophulariaceae

Virgularia ochrophylla

More or less scabrous, the corolla tomentose. Branches slender, strongly ascending, more or less angled, deep-purple. Leaves (only the upper seen) sessile, 2 to 2.5 cm. long, 3 to 5 mm. wide, lanceolate, the uppermost becoming linear, with nar-

rowed base and long-acuminate and acute summit, entire, with revolute margin, thick, yellow-green, especially beneath, where the midrib is very strong and prominent. Pedicels solitary in their axils, 5 to 10 mm. long, slender, ascending. Calyx-tube 6 or 7 mm. long, 4 or 5 mm. wide, campanulate or cupulate, lightly 5-ribbed, with five alternating nerves, the teeth about two thirds the length of the tube, mostly erect, somewhat unequal, subulate, attenuate and very acute. Corolla crimson, reaching 4 cm. or more in length, the tube infundibular, slightly curved and slightly ventricose, reaching 1 cm. in breadth, the narrow portion about as long as the calyx, the limb about 1.5 cm. broad, the lobes subequal, rounded, or broader than long. Stamens exserted, the anthers oblong, 3 or 4 mm. long.

Quime, 8,000 feet, *H. H. Rusby,* July 5, 1921 (*no. 94*). "Shrubby, reaching 6 feet in height. Abundant."

Bignoniaceae

Arrabidaea Cardenasii

Glabrous, with the exception of the cinereous inflorescence. Branchlets rather stout, finely ribbed or nerved. Leaflets 2, one lateral wanting, the other lateral and terminal very similar. Petiole about 2 cm. long, rather stout, the terminal petiolules about equal, the lateral usually a little shorter. Blades to 8 cm. long and 6 cm. broad, the base broad and rounded, usually very slightly produced at the petiolule, the summit produced into a very short and blunt extension; thick, strongly lucid above, where the slender venation is slightly prominent, more prominent beneath, the secondaries about 6 on a side, widely spreading, little curved, the tertiaries almost transverse to the leaf axis. Panicles axillary and terminal, slenderly peduncled, the bracts at the points of branching nearly obsolete, the subulate bractlets at the base of the pedicels minute. Pedicels about 2 mm. long, slender. Calyx 3 mm. long, 2 mm. wide, campanulate-turbinate, minutely subulate-toothed, cinereous, like the branches and corolla. Corolla-tube proper scarcely exceeding the calyx, the expanded portion 7 or 8 mm. long, campanulate, not quite so long as the lobes. Stamens stout, not extending beyond the base of the corolla-lobes, and slightly exceeding the style. Appendage to the connective very short and broad, blunt, blackish. Ovary small, about twice the width of the style. Stipe of the pod biglandular at the base. Pod nearly 3 dm. long, 1.5 cm. broad, not, or very faintly ridged, closely tomentellate, the summit not acuminate, acutish or obtuse.

Rurrenabaque, 1,000 feet, *M. Cardenas,* January 24, 1922 (*no. 2037*). "In sandy loam, bearing small white flowers."

No. 735, collected without flowers, by the author, along the cataracts of the Bopi River, 3,000 feet, September 6, 1921, "growing in the edge of the forest," is evidently a form of the same. The leaflets are somewhat smaller, and not at all produced at the base, but inclined to be subcordate. The pods are about as long but distinctly narrower, smooth and shining, the slender rib on each side more prominent, the summit shortly acuminate and acute.

Arrabidaea sp.

(Specimen without flowers.) This species is very near *no. 2037,* and may be a variety of it. The leaflets are somewhat smaller, and not at all produced at the base, but inclined to be subcordate. The pods are about as long, but distinctly narrower, smooth and shining, and bear a prominent slender rib on each side, the summit shortly acuminate and acute.

Along the cataracts of the Bopi River, 3,000 feet, *H. H. Rusby,* September 6, 1921 (*no. 735*). "Growing in the edge of the forest."

Anemopaegma huachiana

Branchlets slender, minutely muricate with very small lenticels, otherwise glabrous. Leaflets 2, nearly equal and similar. Petioles to 2 cm. long, slender, the petiolules mostly a little shorter. Blades to 1 dm. long, and 5 cm. wide, lanceolate, lightly cordate, acute, thickish, deep-green, the slender venation sharply prominent on both sides, more so beneath. Secondaries 8 to 10 on each side, widely spreading, little curved, forking to interconnect at a considerable distance from the margin, connected by a fine and strong anastomosis of the veins. Panicles axillary and terminal, small and few-flowered, the peduncles longer or shorter than the leaves, the branches very minutely puberulent. Pedicel 4- to 5-angled, 5 mm. long. Calyx 6 or 7 mm. long and broad, campanulate, thickish, loosely enclosing the corolla, the margin sinuate and bearing 5 minute teeth. Corolla-tube proper exceeding the calyx by 2 or 3 mm., the expanded portion about 2 cm. long, the lobes very large and widely spreading. Stamens unequal, the longer ones reaching nearly to the base of the corolla lobes, the others 5 mm. shorter, the thecae horizontal,

the connective not mucronate. Disk annular, 1 mm. high. Style shorter than the shorter stamens, the stigmas oval, broad. Fruit not collected.

Huachi, 1,800 feet, *O. E. White,* September 2, 1921 (*no. 943*). "A high climber in deep woods, the flowers developing in the sunshine at the top. Flowers light orange-yellow, very handsome, and slightly fragrant."

Anemopaegma symmetrica

Young portions, petioles, etc., minutely puberulent. Stems slender, leafy, ribbed. Petioles opposite, divaricate, slender, about 2 cm. long, the petiolules about half as long. Pseudostipules shortly stipitate, nearly orbicular, slightly mucronate, about 7 to 9 mm. broad, green, like the leaflets, which are 2 in number, the central one replaced by a slender tendril. Blades to 8 cm. long by 4 cm. broad, lance-ovate, with rounded or blunt base and abruptly short-pointed acute or obtusish summit, entire, thin, bright-green on both surfaces, the venation slender, sharply prominent beneath, the secondaries 8 or 10 on each side, falcately ascending, connected by a loose reticulation. Peduncles mostly in only one axil, about half the length of the petiole, mostly 2- or 3-flowered, subtended by 2 or more setaceous bracts which are sometimes 3 mm. long or longer. Pedicels slender, about 1 cm. long. Calyx campanulate, nearly 1 cm. long and nearly as broad, truncate, membranaceous. Corolla yellow, 4 or 5 cm. long, the narrow basal portion 1.5 cm. long, 2.5 mm. broad, the broadly infundibular throat nearly 1 cm. broad, the limb nearly 3 cm. broad, the lobes broad and rounded, 2 of them larger than the other 3. Stamens didynamous, the filaments falcate, the longer reaching to the base of the corolla-lobes. Thecae divaricate, lanceolate, obtuse, 3 mm. long. Style about equaling the stamens, the stigmas ovate, obtuse. Disk annular.

Trinidad, 800 feet, *Martin Cardenas,* March 10, 1922 (*no. 14, special*). Species near *A. sylvestris* S. Moore.

Anemopaegma Whitei

Glabrous. Branches elongate, stout, terete, gray. Petioles to 3 cm. long, stout, terete. Leaflets 2, the petiolules to 2.5 cm. long, channeled above, orange or reddish, like the midrib underneath. Blades to 8 cm. long and 4.5 cm. wide, shortly acuminate and acute, with broadly rounded or subtruncate base, thickish,

deep-green, the slender venation prominent on both sides, sharply so beneath, the secondaries 6 or 8 on each side, connected with one another and with the midrib by transverse tertiaries. Panicles axillary, mostly about as long as the leaves, peduncled or branched from the base. Pedicels 2 or 3 mm. long, slender. Calyx very thin and membranaceous, the tube depressed-globose, about 8 mm. wide, the limb irregularly 3-lobed. Corolla-tube proper about 5 mm. long, narrow, the expanded portion campanulate, straight, about 2 cm. long to the base of the lobes.

Huachi, 1,800 feet, *O. E. White,* August 14, 1921 (*no. 955*). "A tall climber with magenta-colored flowers having little odor. A very profuse bloomer and very showy."

Anemopaegma leptosiphon

Glabrous. Stems slender, the stipuloid appendages not present. Leaves bifoliolate, the middle leaflet replaced by a tendril. Petioles 2 to 3 cm. long, divaricate, stout, about twice the length of the petiolules. Blade to 9 cm. long by 5 cm. wide, oval-ovate, with broadly rounded or slightly cordate base, abruptly contracted into a short, mostly obtuse acumination at the summit, entire, thick, pale-green, finely verrucose on both sides, the slender venation prominent beneath, the secondaries about 7 on each side, strongly ascending and falcate, the finer venation coarsely anastomosing. Racemes axillary, few-flowered, shortly peduncled, the pedicels about twice as long as the peduncles, recurved. Calyx 10 to 12 mm. long, about 7 mm. broad, campanulate, thickish, muricate or verrucose, the lobes short and broad, unequal. Corolla lilac-colored, about 3 cm. long when fully developed, the tube and throat of about equal length, the tube scarcely 2 mm. wide, abruptly expanded into the throat, which is 7 mm. wide, the lobes short and broad, sharply recurved.

Dissection material wanting.

Ixiamas, 800 feet, *M. Cardenas,* December 15, 1921 (*no. 1926*). "Growing in damp soil on pampa, the flowers lilac-purple." Species very near *A. symmetrica,* but well distinguished by the peculiar leaf-surface, as well as the size and form of the flowers.

Pithecoctenium glaucum

(Fruiting specimens.) Lower leaf-surfaces minutely strigose or papillose and roughish. Branches stout, pale-gray, sulcate or angled, much wrinkled in drying, bearing one or two

small spheroid glands in the axil of each petiole, and occasionally one on the internode. Petioles stout, pale, angled, 3 to 5 cm. long, the petiolules similar, usually shorter, occasionally longer. Leaflets usually 2, occasionally 3 or 1, extremely variable in size, sometimes 15 cm. long by 10 cm. broad, ovate or oval, with rounded, truncate or subcordate base and an extremely abrupt acumination, which is obtuse or acutish and sometimes 2 cm. or more long; entire, thin, bright-green above, pale or glaucous beneath, 5- to 7-ribbed, with several of the lower secondaries similar to the basal ribs, all slender and sharply prominent beneath, connected by numerous slender tertiaries. Fruits shortly racemose, the peduncle and pedicels extremely stout, the pedicels 1 cm. or more long, the summits abruptly dilated, the disk hemispheric. Pod to 2 dm. long, 4 cm. broad, oblanceolate, obtuse, densely spiny, the spines brown, divaricate, about 5 mm. long, acute. Seed brown, strongly compressed, 10 to 15 mm. broad, obovate or subrotund, a ridge extending two thirds of its length, the very thin hyaline wing very broad, surrounding both sides and the summit.

Rurrenabaque, 1,000 feet, *Martin Cardenas,* January 5, 1922 (*no. 2063*).

Adenocalymna densiflora

Inflorescence tomentellate; otherwise glabrous. Branchlets stout. Only the uppermost leaves seen, the common petioles 3 cm. long, stout, ascending, the upper surface plane, the petiolules about as long. Leaflets 3, the blades 9 to 18 cm. long, 7 to 10 cm. wide, ovate with rounded base, and very abruptly, shortly and obtusely pointed summit, thin but rigid, the venation very slender, slightly prominent on both surfaces, the secondaries 10 or 12 on each side, ascending at about 45 degrees, slightly curved, connected by crooked tertiaries and by a loose reticulation. Panicle long and stoutly peduncled, densely branched, the branches angled. Pedicels slender, in flower about 1.5 cm. long. Unopened calyx ovoid, acute or shortly mucronate, in flower campanulate, 6 or 7 mm. long and equally broad or broader, coriaceous, the summit unequally and irregularly ruptured into 2 or 3 divisions. Corolla tomentose, 3.5 to 4 cm. long, the narrow basal ventricose portion 1 cm. wide, the throat curved, the limb 2 cm. broad.

Cataracts of the Bopi River, 3,000 feet, *H. H. Rusby,* September 3, 1921 (*no. 485*).

Lundia truncata

Inflorescence, petioles, and veins of the lower leaf-surfaces puberulent. Branchlets terete, gray-brown, finely costate. Leaflets 2, subequal. Petioles to 3 or 4 cm. long, slender, terete. Petiolules about a third as long, slender. Blades to 8 cm. long, 5 cm. wide, ovate with truncate, mostly oblique base and very abruptly acuminate and acute summit, very thin, bright-green above, brown beneath, where the slender venation is moderately prominent; 3- to 5-nerved from the summit of the petiole, the nerves short, the secondaries 3 or 4 on a side, widely spreading, the ends sharply up-curved, sparsely connected by crooked tertiaries. Panicles axillary and terminal, mostly small and few-flowered, the peduncles a little longer than the petioles, the bracts and bractlets nearly obsolete. Pedicels 3 to 5 mm. long, slender. Unopened buds shortly mucronate, the mucro mostly expanded into the minute teeth. Calyx regularly turbinate, with truncate summit, 6 mm. long and 5 mm. broad, ferruginous. Corolla-tube broad, exceeding the calyx, the expanded portion campanulate, nearly 2 cm. long, somewhat ventricose. Stamens unequal, the 2 longer about as long as the corolla-tube, the others about 5 mm. shorter. Connective not mucronate. Style exceeding the stamens, the stigmas ovate, thin, whitish, connate at the base to form a small concavity.

Rurrenabaque, 1,000 feet, *M. Cardenas,* January 24, 1922 (*no. 2036*). Species very near *L. phaseolifolia* Rusby.

Macfadyena violacea

(The specimen is unique and consists only of the end of a branch, bearing a pair of very young leaves and a terminal cyme of eight flowers and buds.)

Glabrous, with the exception of the inflorescence and a sparse puberulence on the veins of the lower leaf-surfaces. Branchlets very slender, herbaceous, costate or sulcate. Leaflets two, with a tendril between. Petioles 3 cm. long, very slender, like the petiolules, which are nearly 2 cm. long. Blades 8 × 3 cm., lanceolate, obtuse at both ends, thin and herbaceous, the secondaries 8 or 10 on each side, strongly ascending and lightly curved, the venation slender and obscure. Peduncle about as long as the petioles, dichotomous, the branches slender, minutely subulate-bracted. Pedicels about 1 cm. long, slender, sharply angled, bearing a pair of early deciduous bracts near the calyx, which are subulate and subscarious. Calyx cupulate-campanulate, 5 mm. long and wide, five-angled, the summit shortly, broadly,

and sharply toothed, fissured on one side, ultimately to the base, membranaceous, puberulent. Corolla violet, with lighter tube, closely puberulent, broadly infundibular, 4 cm. long to the base of the lobes the contracted basal portion little longer than the calyx, the lobes rounded, nearly 3 cm. long, strongly veined. Longer filaments 2.5 cm., the shorter 2 cm. long, the thecae divergent, 2 mm. long, oblong. Styles slightly exceeding the stamens, the stigma ovate, obtuse, 1.5 mm. long. Ovary 3 mm. long, lanceolate, pubescent. Disk annular, spreading, the margin crenulate or finely sinuate.

Rurrenabaque, 1,000 feet, *H. H. Rusby,* October 7, 1921 (*no. 774*).

Jacaranda atropurpurea

Youngest portions, lower leaf-surfaces, etc., minutely puberulent. Branchlets elongate, slender, fleshy. Leaves (rather young), about 2 dm. long, the petiole about a fourth of the length, the leaflets mostly 7 or 9, opposite, about twice the length of the winged internodes, of which the wings gradually widen upward. Leaflets sessile, irregularly lance-oblong, short-acuminate at both ends, minutely mucronate, entire or obsoletely serrulate, very thin, dark-green, the venation obscure, the secondaries 6 or 8 on a side, strongly ascending. Flowers in small loose panicles from the wood, sessile or short-peduncled, the branches and flowers opposite, the bracts linear, acute, 3 or 4 mm. long, the pedicels mostly with a pair of minute bractlets above the middle, very slender, of irregular length, some nearly 2 mm. long. Calyx 5 mm. long and broad, campanulate, many-nerved, shallowly crenate, the teeth mucronate. Corolla about 6 cm. long, the tube infundibular, nearly 1 .5 cm. broad at the base of the lobes, as pressed, the lobes broad and rounded, about 1 to 1.5 cm. long, the corolla deep-purple or maroon. Anthers about half the length of the corolla, one pair a little shorter, the filaments curved, flattened, brown-purple, yellow and slightly enlarged at the summit, the base flattened and densely pilose, like the inside of the corolla-tube at that place. Thecae horizontally divergent, each about 1.5 mm. long, acuminate and acute. Disk crateriform, thick, lobed. Ovary ovoid, shorter than the calyx. Style thickish, two thirds of the length of the corolla, the stigma shortly 2-lobed, the lobes flattened.

Near Rurrenabaque, 1,000 feet, O. E. White, October 8, 1921 (*no. 862*). "A shrub to 8 feet, the flowers dark maroon-purple. Leaves reputed remedial in syphilis."

Tabebuia suberosa

(Fruiting specimens.) Branchlets short and thick, gray, exceedingly rough from crowded concave scars with thick corky margins. Petioles 5 to 10 cm. long, slender, grooved. Leaflets 5, the petiolules 2.5 to 5 cm. long, similar to the petioles. Blades 6 to 12 cm. long, 3 to 6 cm. broad, elliptic with rounded summit and base, the latter mostly a little inequilateral; irregularly sinuate-dentate, thick and rigid, finely papillose on both surfaces, drying brownish, the venation lightly prominent beneath, coarsely reticulate, the secondaries 8 or 10 on a side, crooked, widely spreading, connecting at some distance from the margin. Fruits racemose, the peduncles and pedicels very stout, deeply annulate-fissured. Follicles about 1.5 dm. long, 1.5 to 2 cm. broad as pressed, oblanceolate, obtuse, finely papillose. Seeds about 4 cm. long, including the wing, the seed body about 2 cm. long, and nearly as wide, the wing coarsely fimbriate.

On the pampas near Lake Rogagua, Bolivia, 1,000 feet, *H. H. Rusby,* November 3, 1921 (*no. 1423*). A common tree, of crooked, stunted growth, occasionally 25 to 30 feet high, the bark excessively corky-roughened, the wood light and brittle and used for rafts. Known as "cork-tree."

The above is the type, but another specimen, collected in flower, appears to be the same. The leaves are about two thirds as large. Pedicels slender, 1 cm. long, abruptly enlarged at the summit. Calyx 1.5 cm. long, 1 cm. broad, turbinate-campanulate, the mouth as in the type. Corolla 6 or 7 cm. long, the tube nearly 1.5 cm. wide, as pressed, many-nerved, yellow.

Trinidad, 700 feet, *M. Cardenas,* March 7, 1922 (*no. 26, special*). "Common tree of pampas, growing to 9 feet, with yellow flowers. The bark is different from the one that grows about Lake Rogagua." I should regard it as a mere variety of *T. suberosa.*

Gesneriaceae

Nautilocalyx Whitei

Pilose or subtomentose, except the upper leaf-surfaces. Stems thick but weak, a foot or two long, prostrate and rooting, at least at the base, more or less angled or sulcate. Leaves crowded at the summit, the inflorescence densely crowded among their bases. Leaves 15 to 25 cm. long, 3 to 5 cm. broad, lanceo-

late or oblanceolate with long tapering base and acuminate and acute summit, thin, deep-green above, purple beneath, unequally short-serrate-dentate, the venation coarse but weak, the falcate-ascending secondaries 5 to 7 on each side. Bracts lanceolate, large, long-acuminate and acute. Calyx free, 5-parted, somewhat oblique, the lobes 1.5 to 2.5 cm. long, narrowly lanceolate, long-acuminate and acute, ciliate, foliaceous, 2 narrower and a little shorter than the others. Disk of two upper lobes, connate nearly to the summit. Corolla nearly 4 cm. long, consisting of a short constricted base, an ample campanulate tube and a short expanded limb, the tube being moderately ventricose near the middle and saccate at the base, the sac short, blunt and slightly falcate, the limb 5-lobed, the lobes nearly equal, short and rounded. Filaments distinct, adnate to the lower part of the corolla, dilated at the base, subcircinately curved. Anthers small, distinct, broadly oval. Ovary conic, the style filiform, shorter than the stamens, the stigma strongly 2-lobed. Flowers handsome, cream-colored.

Tumapasa, 1,500 feet, *O. E. White,* December 6, 1921 (*no. 1830*).

Drymonia Campbellii

Leaves sparingly and shortly strigose. Stems stout but weak, reclining or somewhat climbing, red, the branches short and stout. Leaves opposite, the slender petioles 1.5 to 3 cm. long, the blades 8 to 15 cm. long, 3 to 7 cm. wide, oval and somewhat oblique, acute at the base and abruptly short-acuminate and acute at the summit, irregularly and shallowly sinuate-dentate, very thin, bright-green above, pale beneath, the venation sparse and very slightly prominent beneath, the secondaries 5 or 6 on a side, falcately ascending. Peduncles solitary in the axils, slender, mostly shorter than their petioles. Calyx-lobes moderately unequal, triangular-ovate, short-acuminate and acute, somewhat oblique, entire or nearly so, foliaceous, thin, the largest 3 cm. long, more than 2 cm. broad. "Corolla white externally, brown within," larger than the calyx, the lobes broadly obovate, crenate.

Rurrenabaque, 1,000 feet, *M. Cardenas,* November 22, 1921 (*no. 1755*).

Species dedicated to Mr. Milton Campbell, President of the H. K. Mulford Company, through whose generous interest the Mulford Exploration was made possible.

Seemannia dioica

(But one specimen seen.) Densely gray-pilose, except the bright-green upper leaf-surfaces, which are very sparingly strigose with short, tapering hairs. Stems 2 dm. high, decumbent at the base, angled and sulcate. Leaves opposite, the petioles 1 to 2 cm. long, thin and weak, the blades 8 to 15 cm. long, 3 to 5 cm. broad, ovate with acuminate and acute summit and subrotund or obtuse base, entire or obscurely serrulate, ciliate, very thin, gray beneath, bright green above, the venation weak and inconspicuous, the secondaries 8 or 10 on a side, falcately ascending, faintly reddish. Flowers solitary in the axils, the peduncles very slender, 2 or 3 times as long as their petioles. Calyx-tube turbinate, about 3 mm. long and nearly as broad, the recurved lobes nearly twice as long, herbaceous, narrowly lanceolate and acuminate and acute. Corolla rose-colored, gray-pilose, 2.5 cm. long, the base slightly oblique and slightly gibbous, the tube moderately ventricose above the middle, the teeth very short, and green. Disk and pistil wanting. Stamens distinct, inserted at the base of the corolla, the base of filaments calcarate, the anthers extending to mouth of corolla, distinct.

A single specimen. Rurrenabaque, 1,000 feet, *M. Cardenas,* January 29, 1922 (*no. 2038*).

The anomaly of a unisexual plant in this family is difficult of explanation. The plant is technically a *Seemannia,* by its corolla teeth, and calcarate filaments, while its distinct but connivent anthers are exceptional in this genus. It may be an abnormality, possibly a hybrid with an *Achimenes.* The fact that only one specimen could be found is suggestive of an abnormal origin.

Corytholoma paludosa

Closely and somewhat harshly tomentellate throughout. Rhizome elongate, apparently not scaly. Stems to a meter high, erect, slender, mostly simple, sparsely leafy, reddish, terete or slightly angled or sulcate in places. Leaves opposite or ternate, the lowest, if present, very small and rudimentary, but green; those of the middle portion of the stem sessile, to 8 cm. long and 3 cm. wide, obtuse at both ends, finely crenate, thick and somewhat fleshy, bright-green above, gray beneath, where the venation is very strong and more or less reddish, very strongly and crookedly anastomosing. Floral leaves reduced to ovate, thick, green, rigid bracts. Peduncles one-flowered, solitary in the axils

of the bracts, erect, nearly 2 cm. long, slender. Calyx-tube hemispheric, 6 to 9 mm. broad, shorter than the triangular-acuminate, subequal rigid erect or slightly spreading calyx-lobes. Corolla scarlet, densely gray-pubescent, 3 cm. long, the greatest width, as pressed, 8 mm., the upper lip erect, about 8 mm. long, the lower lip very short, recurved-spreading. Basal gibbosity of corolla 3 mm. long, oval, erect and appressed. Corolla ventricose to about the middle, or a little higher, slightly contracted above. Middle lobe of the lower lip 5 mm. broad, and not so long, the lateral lobes much broader. Upper lip about 1 cm. broad, deeply emarginate, somewhat narrowed at the base. Stamens moderately exserted, the anthers all coherent, but easily separable in pairs. Filaments attached at the base of the corolla. Two posterior glands of the disk large, slightly emarginate, subconnate, the lateral glands closely adjacent, ligulate, the anterior very small. Ovary conic, 5 mm. long, pubescent, like the style, which at length exceeds the stamens. Stigma shortly 2-lobed, recurved.

Ixiamas, 1,500 feet, *O. E. White,* December 13, 1921 (*no.* 1111); near Reyes, *White,* October 25 (*no. 1534*). "Growing in bog-land, associated with a white orchid and grasses and sedges. Flowers orange-scarlet."

Acanthaceae

Mendoncia robusta

Entire plant yellowish by a dense covering of short mostly appressed hairs, the upper leaf-surfaces scabrellate with minute tufts. Stems quadrangular, stout. Petioles 3 to 5 cm. long, rather stout, erect, the base sharply upcurved and incurved, in age becoming elongate and reflexed and twisted. Blades thick, 8 to 15 cm. long, 5 to 10 cm. wide, ovate, acute, with rounded base, entire, the midrib and secondaries lightly prominent above, strongly so beneath, the secondaries 4 or 5 on a side, ascending and lightly curved, connected by slender tertiaries, the smaller venation inconspicuous. Leaves on young shoots much larger and narrower, oval or somewhat obovate, on shorter petioles, the base slightly cordate. Peduncles one or two, stout, shorter than the petioles. Bracts at length about 3 cm. long and broad, oval with the summit rounded or subtruncate and minutely mucronate, the midrib very strong, the secondaries prominent and stout, interarching near the margin. Flower (but one seen) twice the length of the bracts, apparently dark-red. Immature

fruit wholly enclosed in the bracts, tipped with the long, slender, twisted style.

Rurrenabaque, 1,000 feet, *M. Cardenas,* October 6, 1921 (*no. 808*).

var. (?) **alba**

Stems slender. Leaves shorter and relatively broader, abruptly very short-acuminate at both ends, thin. Flowers white. Bracts and fruit similar to those of the preceding, but smaller.

Collected at the same time and place as the last, by the same collector, who regarded them as distinct species. Whether this is a distinct species, or a mere variety of a polymorphous one, is a question that must await further information.

Ruellia serratitheca

Subglabrous, the scattered whitish hairs short, minute, appressed, the stems quadrangular and sulcate. Petioles 1 to 2 cm. long, slender, channeled, the bases of the younger ones connected by an interpetiolar line. Blades 7 to 15 cm. long, 3 to 6 cm. broad, ovate, acuminate and acute, the base abruptly and slightly produced into the petiole; lightly and irregularly sinuate-dentate, bright-green, thin, the slender venation prominent beneath, the secondaries about 7 on a side, moderately ascending and lightly curved and connected by numerous straightish tertiaries. Panicles axillary, on very long and slender peduncles, small, narrow and few-flowered, the subconnate bracts linear, elongated. Calyx 5 mm. long, the tube cupulate, very short, the teeth linear-setaceous, subequal. Corolla bright-yellow, the narrow cylindric tube a half longer than the calyx, abruptly inflexed above, the upper portion 2 cm. long, campanulate, slightly contracted at the mouth, the lobes erect, very short, obtuse. Lower portion of filaments connate in pairs, the anthers subexserted, one theca minutely serrate on the margin.

Canamina, 4,500 feet, *H. H. Rusby,* July 28, 1921 (*no. 363*).

Ruellia multisetosa

(Aphragmia.) Leaves minutely strigose, the inflorescence hirsute. Branches sharply quadrangular. Petioles about 2 cm. long, stout, channeled above, mostly recurved. Blades to 1.5 dm. long, 5 cm. broad, ovate, with base abruptly narrowed into the

petiole and abruptly acuminate and acute summit, obscurely sinuate-dentate, thick and drying brown, the midrib lightly grooved above, prominent beneath, the slender secondaries about 10 on each side, strongly falcate-ascending. Flowers crowded at the ends of the branchlets, their bracts and bractlets simulating an involucre. Bracts about 2 cm. long, ovate, long-acuminate, the bractlets similar but terminating in attenuate acuminations, the calyx-lobes similar, all whitish-hirsute. Corolla-tube nearly 1 cm. long, 3 mm. broad, constricted at the summit. Throat campanulate, nearly 3 cm. long, 1.5 cm. broad at the summit, the lobes subequal, 1.5 cm. long, 1 cm. broad. Stamens didynamous, the longer pair reaching nearly to the base of the corolla-lobes, the others a little shorter, the anthers 3 mm. long, 2 mm. broad, sagittate.

Huachi, 1,800 feet, *O. E. White,* August 13, 1921 (*no. 437*). "A tree, to 15 feet high, in forest, the flowers lilac-purple."

Also collected by H. H. Rusby farther up the Bopi and regarded as the most beautiful flowering shrub seen on this journey.

Ruellia hypericifolia

Finely and very shortly strigose, the lower leaf-surfaces somewhat tomentellate. Stems slender, erect or ascending, branched, leafy to the summit, the branches sharply quadrangular. Leaves 2 to 5 cm. long, 5 to 15 mm. wide, lanceolate or varying to oblanceolate, obtusish with acuminate subsessile base, entire, grayish-green, or slightly brownish beneath, where the thick midrib and 5 or 6 pairs of crooked strongly ascending secondaries are prominent. Flowers solitary in the axils, subsessile, the calyx tube very short, the slightly unequal lobes narrowly lanceolate and attenuate at the summit, subcarinate at the base, the largest to 12 mm. Corolla lilac, about 3 cm. long, the lower half of the tube narrowly cylindric, mostly straight, the upper half campanulate, the large, broadly recurved lobes widely spreading or recurved. Filaments attached at the summit of the cylindric portion of the tube, the longer stamens nearly as long as the corolla, the shorter ones only about half as long. Anthers large, lanceolate, lightly cordate. Style 2.5 cm. long, very slender. Capsule obovoid, light-brown, nearly equaling the calyx-lobes.

Near Reyes, 1,000 feet, October 26, 1921 (*no. 1322*).

Aphelandra cryptantha

Stem and inflorescence densely white-pilose, with spreading hairs, the lower leaf-surfaces sparsely and the upper still more sparsely so. Leaves sessile, or the lower with extremely short broad petioles, the upper (only ones seen), 1 dm. or more long, 4 or 5 cm. wide, oblanceolate, terminating in a small spine, the upper fourth of the margin entire and ciliate, the lower three fourths spinose-dentate, the teeth successively larger and more spinose toward the base; thin but rigid, deep-green above, paler or yellowish beneath, where the midrib and secondaries are somewhat prominent, the latter 8 or 10 on a side, slender, moderately spreading and lightly curved. Spike terminal, single and simple, more or less peduncled, about 3 cm. broad, extremely dense. Bracts about 2 cm. long and 6 mm. wide, brown, lanceolate, acuminate and very acute, bearing about 4 long-attenuate pungent spines on each side. Flowers entirely concealed by the bracts. Sepals ciliate, the largest 1 cm. long and 4 mm. wide, oblong, acute, two others slightly longer and only half as wide, lanceolate, the fourth much shorter and narrower, lance-linear. Corolla a little longer than the calyx, red at the summit, yellowish below, the tube straight and equal, the lips nearly equally 3 mm. long, the upper erect, entire, ovate, obtuse, the lower 3-lobed, the lobes broadly ovate, obtuse. Filaments attached at the base of the corolla, the deep-red anthers reaching the base of the lips, 3.5 mm. long, minutely muticous. Style equaling the stamens, the stigma minutely 4-lobed. Capsule 1 cm. long.

An imperfect specimen of this plant, collected by Otto Kuntze, at Santa Cruz, in May, 1892, was determined by Dr. Lindau as *A. Rusbyi* Britton, but the excellent specimens collected at Huachi, 1,800 feet, *O. E. White,* August 12, 1921 (*no. 542*), show clearly that the species is distinct.

Aphelandra albadenia

Minutely and sparsely puberulent-strigose with whitish hairs, but the entire plant of a deep-green color and densely leafy. Stem subterete, the internodes short. Leaves 1.5 to 3 dm. long, 3 to 6 cm. wide, long-acuminate at both ends, especially at the base, which tapers into a short margined petiole; entire or obscurely sinuate-crenate, very thin, deep green on both sides, the inconspicuous venation very slender, the secondaries 12 to 15 on a side, falcately ascending. Spikes peduncled in the upper axils, about 1 dm. long, 2 cm. wide, lanceolate, the scales 2 cm.

long, 4 to 5 mm. wide, oblong, acute, ciliate, green, thin. Sepals long-pilose, the largest 2 cm. long, narrowly lanceolate, long-acuminate, the others a little shorter, lance-linear with long-attenuate summit. Corolla nearly 5 cm. long, pubescent, yellow, the erect upper lip 1.5 cm. long, the lower a little longer, spreading, nearly equally 3-lobed, the lobes very short, rounded at the summit. Stamens nearly equaling the upper lip, the filaments attached at the base of the corolla, dilated at the base, two of them attached together. Anthers of the two longer stamens muticous at the base, the others caudate, the tails ending in white, curved, sac-like glands. Style terminating in a slender, divergent white tip.

This very peculiar species was collected by myself at Reyes, 1,000 feet, in June, 1886, and distributed as "*Aphelandra* sp. (?)." It was again collected at the cataracts of the Bopi River, 1,800 feet, *O. E. White,* August 8, 1921 (*no. 442*). It is quite distinct from every other species by its peculiar foliage and especially in its glandular-caudate stamens, in allusion to which it is named.

Schaueria azaleaeflora

Roughly grayish-hairy throughout, the hairs extremely short. Branchlets slender, woody, terete, striate. Petioles 3 to 5 mm. long, slender, the blades 4 to 8 cm. long, 1 to 2.5 cm. broad, inequilaterally oblong and short-acuminate at both ends, very thin, grayish-green, scabrescent, the slender venation not prominent, or slightly so beneath, the secondaries about 5 on each side, ascending, lightly curved, the remaining venation obscure. Spikes mostly simple at the ends of the branchlets, short and dense, the flowers creamy-yellow, showy, 4 to 5 cm. long, the minute bracts subulate. Calyx-tube scarcely any, saucer-shaped, the lobes 3 or 4 mm. long. Tube of corolla somewhat longer than the lips, infundibular, the lower third abruptly contracted and its base very abruptly dilated. Upper lip erect, entire, concave, the lower a little longer, strongly recurved, 3-lobed, the lobes about a third of its length, oblong, obtuse, 3-nerved. Stamens a little shorter than the upper lip, attached near the middle of the tube. Anther-cells parallel, equal, sagittate, the lobes about as long as the body, lightly curved at the ends. Style a little exceeding the stamens, obtuse. Disk cupulate, lightly lobed.

Covendo, 1,800 feet, *O. E. White,* August 23, 1921 (*no. 990*).

Stenostephanus boliviana

Veins of the lower leaf-surfaces, inflorescence, etc., puberulent. Branchlets slender, quadrangular, sulcate. Leaves to 3 dm. long, 1.5 dm. wide, ovate, abruptly contracted into an acuminate, subsessile base and into a short acute terminal acumination, entire, thin, very sparsely and minutely strigose above, puberulent on the veins beneath, the secondaries about 15 on each side. Inflorescence terminal, thyrsoid. Bracts ovate, acuminate, rigid, the bractlets smaller and narrower. Pedicels 1 to 2 mm. long. Calyx-tube crateriform or nearly hemispheric, 2 mm. wide, after anthesis becoming contracted above the ovary and depressed-globose in form. Calyx-teeth 3 mm. long, subulate and attenuate from the base. Narrow portion of the corolla-tube about equaling the calyx, slightly enlarged upward, then abruptly dilated into the ventricose throat, which is 1 cm. long and 8 mm. broad, slightly curved and with the mouth slightly contracted. Upper lip of corolla 5 mm. long, narrow, entire, erect or recurved, the lower lip shortly 3-lobed, the middle lobe a little smaller, the lobes ovate, obtuse, about 3 mm. long. Stamens 2, attached to the base of the corolla, exserted, more than twice as long as the corolla, one shorter than the other and with a smaller anther. Anthers 1-celled. Style filiform, about equaling the stamens, the stigma small, entire.

Ixiamas, 1,500 feet, *Martin Cardenas,* December 12, 1921 (*no. 1905*).

Dianthera graminifolia

Sparsely short-puberulent. Stems slender, simple or branched from the base, weak, irregularly angled, erect or ascending. Leaves sessile, tapering into a short petiole-like base, very unequal, the upper usually longer, to 7 cm. long and 5 mm. broad, lanceolate, acuminate, obtuse or obtusish, entire, thin, deep-green, roughish with sparse, very short hairs on margin and midrib, the venation obscure, the secondaries about 7 or 8 on each side, strongly falcate-ascending. Spikes axillary, mostly exceeding their leaves, very slender, long-peduncled. Bracts to 1 cm. long, linear, attenuate. Calyx at length nearly 1 cm. long, divided to the base, the lobes subequal, lance-linear, attenuate, the midrib prominent. Open corolla more than twice the length of the calyx, bluish-purple. Dissection material wanting. Capsule light-brown, exceeding the calyx, broad, acute, the base contracted.

In shallow water about Lake Rogagua, 1,000 feet, *H. H. Rusby,* November 3, 1921 (*no. 1421*), the type; Ixiamas, 800 feet, *O. E. White,* December 19, 1921 (*no. 2310*). Dr. White says "Flower magenta-colored, with deep magenta spots on throat and lip."

Beloperone viridissima

Inflorescence, etc., pubescent with spreading hairs, the foliage bright-light-green, minutely and sparsely white puberulent, the stems pale-green, very leafy. Leaves 2 to 4 dm. or more long, 4 to 8 cm. broad, oval, obovate or oblanceolate, abruptly acuminate and acute, gradually tapering into a short margined petiole-like base, lightly and irregularly sinuate-dentate, thin, the midrib mostly channeled above, prominent beneath like the slender secondaries, which are 10 to 15 on a side, strongly falcate-ascending, lightly connecting almost at the margin, the connecting reticulation sparse and very slender. Panicles terminal, long-peduncled, ample, much-branched, the branches strongly ascending, mostly subtended by setaceous-linear bracts, like those of the sessile flowers, the floral bracts mostly a little more than half the length of the calyx. Calyx-tube cupulate, very short, the lobes about 5 mm. long, one a little larger, narrowly lance-linear and long-attenuate. Corolla-tube 2.5 cm. long, lightly curved, narrowly infundibular, the basal portion contracted. Lower lip 1.5 cm. long, narrow, minutely 3-toothed, the teeth obtuse. Upper lip a little shorter and much broader, concave. Stamens almost equaling the upper lip, the style exceeding it, obtuse. Fruit not seen.

Huachi, 1,800 feet, *O. E. White,* August 13, 1921 (*no. 550*).

Rubiaceae

FLEXANTHERA gen. nov.

Calyx-tube turbinate, the limb abruptly expanded, short, five-lobed, imperfectly deciduous. Corolla campanulate, five-lobed, valvate-induplicate, the terminal portions more or less concave and pubescent within. Stamens five, borne about the middle of the corolla-tube, exserted, the filaments dorsally flattened, pilose at the base, the anthers oblong, compressed, basally attached, sagittate, at length reflexed and recurved, completely laterally dehiscent. Ovary two-celled, the placentae elongate, fleshy, centrally affixed by the lower half, the numerous ovules imbedded in

the surface. Style exserted, upwardly thickened, shortly two-lobed, the stigmas rounded. Disk tumid, hemispheric but the summit concave. Type, *Flexanthera subcordata* Rusby.

A tree, with opposite, ovate, ample leaves, and small terminal panicles. A single imperfect capsule is two-celled, oblong, compressed and with thick pericarp. Stipules not seen. The genus is allied to *Rustia,* from which it differs in its smaller flowers, reflexed and recurved dehiscent anthers and deciduous calyx-limb and in the character of its placentae.

Flexanthera subcordata

Glabrous, the branchlets terete and stout. Petioles 1 to 2 cm. long, stout, subterete, the blades 10 to 25 cm. long, 6 to 18 cm. broad, ovate and somewhat rhomboid, the base lightly cordate, the summit short-acuminate and acute; membranaceous, deep-green on both sides, with the slender venation strongly prominent underneath. Secondaries 15 to 20 on a side, widely spreading, and falcately connecting near the margin. Panicles terminal, solitary, (in one case two), five to seven cm. long inclusive of the short, stout peduncle, loosely flowered, the flowers sessile or the ovary tapering into a very short pedicel. Calyx 4 mm. long, the lobes half as long as the tube and broader than long, with rounded summits. Corolla 6 mm. long, the lobes one fourth of the length, at length somewhat spreading, their summits lightly concave and slightly pubescent. Filaments, when fully extended, nearly twice the length of the corolla, attached about the middle of the tube, pilose at the base, flattened, broadest at about the middle and again broadened at the point of attachment to the anthers, which is just back of the sinus. Anthers about as long as the corolla-lobe, linear-oblong, at length reflexed and recurved. Style equaling or exceeding the filaments, thickened upward, shortly two-lobed, the stigmas rounded.

East of Bonda, Colombia, in the month of July, *Herbert H. Smith* (*no. 2404*). "A tree to 40 feet in height."

Mr. Smith regards this as distinct from his *no. 92,* by virtue of its longer stamens. Further information in regard to this is necessary. The filaments appear to elongate irregularly during anthesis, and it is possible that a dimorphic condition may exist.

Flexanthera fragrans

Peduncles and inflorescence puberulent, the branchlets rather stout, leafy. Stipules deciduous, not seen. Petioles about 8 mm.

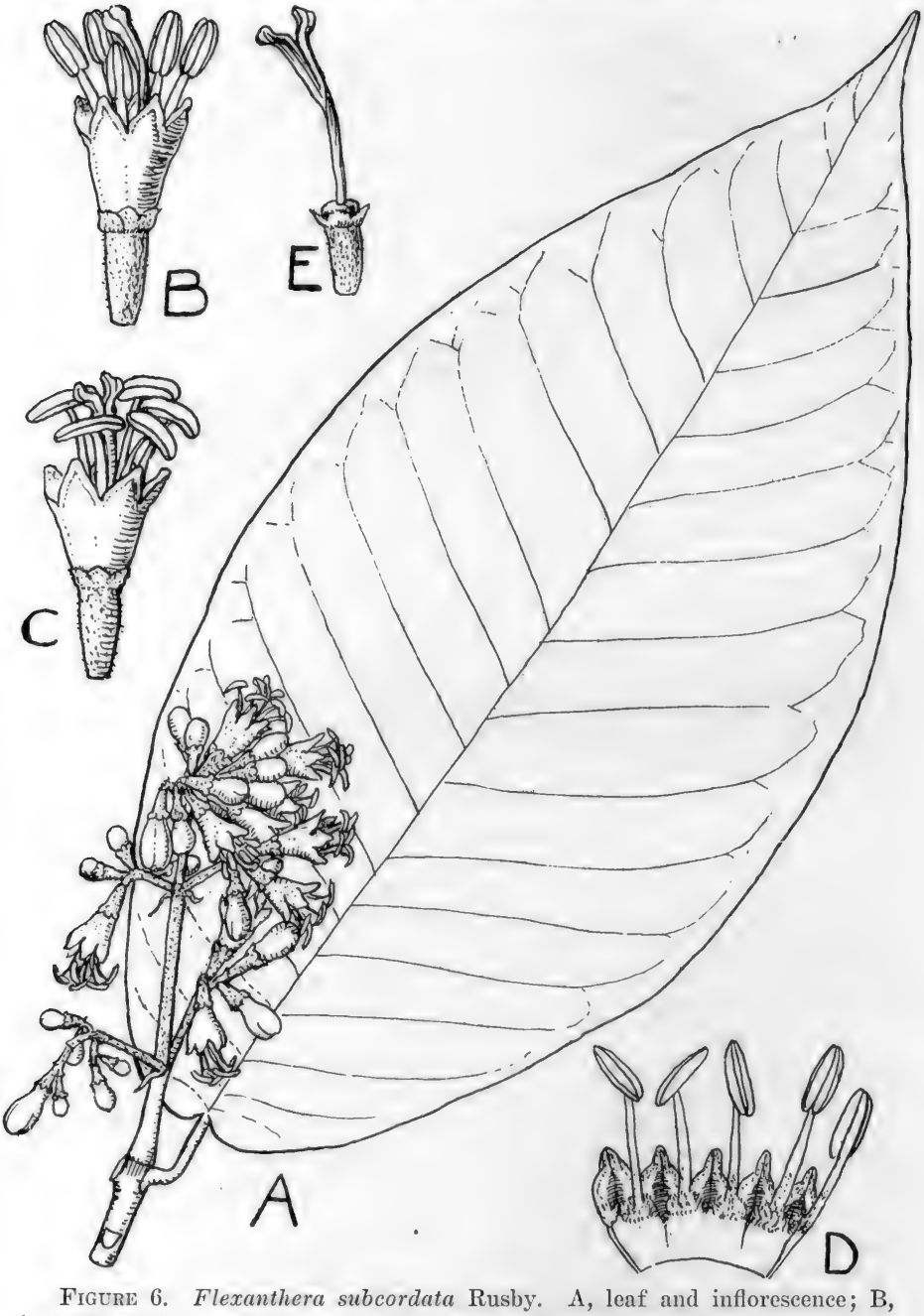

FIGURE 6. *Flexanthera subcordata* Rusby. A, leaf and inflorescence; B, single flower in young state, × 2; C, the same when older, with anthers reflexed, × 2; D, inner view of mouth of corolla, with pilose lobes and stamen attachment, × 2; E, calyx, with disk and style, × 2.

long, stout, recurved. Blade 12 to 18 cm. long, 5 to 8 cm. wide, ovate, with round or subcordate base, short-acuminate, obtuse, bright-green on both sides, the secondaries 14 to 18 on each side, the outer portions strongly falcate, connecting very close to the margin, connected by very numerous curved tertiaries, the venation strongly and finely anastomosing, prominent on both surfaces. Peduncles 2 to 4 cm. long, stout, quadrangular, reddish, shorter than the panicles, which are densely flowered at the ends of the branchlets. Bractlets minute. Flowers subsessile, the calyx-tube infundibular, about 2.5 mm. long, the limb 1.5 mm. broad, the very short, broadly ovate obtuse teeth erect and appressed, short-ciliate. Corolla fleshy, the tube about 3 mm. long and nearly as broad, the limb a little shorter, 4-lobed, the lobes broadly ovate, obtuse, erect, subcarinate. Corolla wholly puberulent on both surfaces. Filaments attached about the middle of the tube, short-pilose, dilated below, the exserted portion somewhat recurved, nearly as long as the corolla. Anthers reflexed, oblong, longitudinally dehiscent, cordate, the lobes rounded. Style about equaling the stamens, stout, upwardly thickened, short-pilose, the stigmas 2, sharply truncate. Disk tumid, hemispheric, blackish or deep-purple.

San Buena Ventura, 1,000 feet, *M. Cardenas,* December 1, 1921 (*no. 1738*). "A small shrub on river-margin. Flowers white, very fragrant."

Macrocnemum hirsutum

Inflorescence and lower surfaces of the young leaves short-hirsute. Branchlets short, stoutish, obtusely angled, enlarged at the upper portions of the internodes, leafy. Stipules caducous, to 3 cm. long and 1 cm. broad, oblanceolate, with rounded summit, thickish, brown or purplish. Petioles unequal, to 2 cm. long. Blades to 13 cm. long and 5 cm. broad, obovate, with mostly obtuse base and a very short, broad, obtuse point at the summit, entire, thick, drying brownish, the midrib channeled on the upper surface, prominent beneath, as are the slender secondaries, which are about 10 or 12 on each side, mostly scrobiculate in the axils, spreading at an angle of about 45 degrees, and lightly curved towards the end, connected by few crooked tertiaries. Panicles in the upper axils, rather small, long-peduncled, the bractlets subulate, very small, the hairs somewhat ferruginous. Flowers sessile or subsessile. Calyx-tube infundibular, about 7 mm. long, finely nerved, the limb about 2 mm. broad, shallowly lobed. Corolla-tube about 8 mm. long, infundibular,

10-nerved, slightly enlarged about the middle, the lobes 5 mm. long, broad, obtuse, thick, tomentose on the inside. Filaments 8, 5 with anthers, attached a little above the middle of the tube, unequal, the longest 5 mm. long, tapering upward, the lower portion flattened and densely pilose, the anthers rounded, small. Disk black, 1 mm. high, thick and fleshy, the margin sinuate. Style 8 mm. long, filiform, the stigma clavate.

Rurrenabaque, 1,000 feet, *H. H. Rusby,* October 15, 1921 (*no. 1296*).

Duggena Whitei

Densely pubescent with yellowish-gray hairs, those of the stem divergent or slightly reflexed, the upper leaf surfaces rather sparsely strigose. Stems tall and slender, with elongate internodes, terete. Interpetiolar stipules entire, more than twice the length of the petioles, subulate with long-attennate summit. Petioles 2 to 4 mm. long, rather stout. Blades 7 to 14 cm. long, 2 to 6 cm. broad, ovate, with obtuse base and acuminate and acute summit, entire, thin, deep-green and somewhat strigose above, yellowish-gray beneath, where the slender midrib and strongly ascending secondaries, about 10 to 12 on a side, are lightly prominent, the venation scanty and obscure. Panicle in my specimen about 2 dm. long, long-peduncled, the peduncle and rachis stout. Bracts narrowly linear-attenuate, unequal, mostly longer than the longest pedicels, which, in flower, are about 3 mm. long, slender and mostly divergent, the flowers mostly in threes. Calyx nearly as long as the pedicel, the tube broadly ovoid or subglobose, about as long as the longest tooth, the 4 teeth subulate and acuminate. Corolla puberulent, the tube 4 or 5 mm. long, very slender, the throat moderately enlarged, the 4 lobes three fourths as long as the tube, oval, thickish, widely spreading. Anthers and style reaching beyond the middle of the tube, the stigma entire, truncate.

Specimen without collection date (*no. 1294 A*). It may be the same as *no. 2350,* collected at Rurrenabaque, Bolivia, *O. E. White,* January 13, 1922, although its flowers are more slender.

Sabicea acutissima

Tomentellate throughout. Branches elongate, stoutish, terete, gray. Stipules 1 cm. long, 6 mm. broad, ovate from a broad base, acute, reflexed, herbaceous, and colored like the leaves. Petioles to 2 cm. long, the narrow margins involute,

mostly reflexed. Blades to 15 cm. long and 6 cm. wide, ovate, with the base abruptly and shortly produced into the petiole, abruptly short-acuminate and very acute at the summit, entire, deep-green above, gray and very softly tomentellate beneath, the slender midrib and secondaries lightly prominent above, the latter 10 to 12 on a side, strongly ascending and slightly curved, the slender venation obscure, densely anastomosing. Peduncle in only one axil of a node, shorter than the petiole, the cyme hardly 2 cm. broad, densely flowered, the hirsute flowers subsessile. Calyx-tube 3 mm. long, campanulate, the lobes somewhat longer, narrowly lanceolate, acutish, widely spreading, about equal, longer than the corolla-tube, not equaling the corolla-lobes, which are ovate, acutish, recurved.

Rurrenabaque, 1,000 feet, *M. Cardenas,* November 25, 1921 (''*no. 1185.*'' There is apparently a confusion of numbers, as I have *1185* recorded as a ''*Bassovia* 8 to 10 feet high, with white flowers'').

Watsonamra sordidiflora

Glabrous, the branches elongate and slender, terete. Stipules distinct, 5 to 8 mm. long, ovate, obtuse. Petioles 1.5 to 3 cm. long, the margins strongly upcurved. Blades 1 to 3 dm. long, 5 to 12 cm. wide, varying from lance-ovate to oval, obtuse, the largest ones entire, the smaller upper ones, or some of them, very irregularly erose-toothed or erose-pinnatifid, all thin and membranaceous, the slender venation prominent, the secondaries 15 to 20 on a side, lightly falcate-ascending, sparsely connected by tertiaries. Panicles terminal, shortly and stoutly peduncled, the peduncles somewhat quadrangular, the inflorescence lax, the ultimate branches and pedicels erect or nearly so, the inflorescence and flowers of a cherry-red color. Pedicels slender, somewhat thickened upward, some of them 1 cm. long, subtended by very small rigid, attenuate bractlets. Calyx-tube, in flower, about 1.5 mm. long, irregularly turbinate, lightly angled, the limb about 2 mm. broad, abruptly spreading or lightly recurved, crenately 5-lobed, the blackish hemispheric disk conspicuously projecting. Open flowers not seen, the buds densely yellowish-scurfy-tomentose, about 1 cm. long and nearly half as broad, somewhat clavate, with rounded summit and truncate or umbilicate base. Stamens attached below the middle of the corolla, at the top of a pilose band, the filaments slender, nearly half as long as the linear anthers, which are attached at about the middle of the back, and extend to the base of the corolla

lobes. Style filiform, slightly thickened upward, the branches a fourth of the total length, flattened, enlarged at the summit, puberulent. Very young fruit ovoid, coarsely 9- or 10-ribbed, the ribs rounded, and bearing the calyx-teeth and prominent black disk.

Rurrenabaque (San Buena Ventura), 1,000 feet, *M. Cardenas,* November 26, 1921 (*no. 1190*). "A slender shrub, to 12 feet high, in forest."

Basanacantha erythropoda

(Fruiting plant.) Glabrous, except the venation of the lower surface of young leaves. Branchlets short, stout, terete, of a light reddish-brown color, mostly bearing a pair of pungent spines at the end, the outer bark exfoliate. Stipules small, obscure caducous. Leaves sessile, to 8 cm. long and 3 cm. broad, obovate, with acuminate base and abruptly very short-pointed, acutish summit, entire, thin, pale green, the midrib on the lower surface minutely short-hairy when young, the slender secondaries about 6 or 8 on a side, forking above the middle, the branches looped together at some distance from the margin. Flowers not seen. Fruit terminal, solitary, the peduncle about 1 cm. long. Fruit globose, to 2.5 cm. in diameter, purple, finely verrucose, bearing the calyx-limb, its cylindric portion 2 mm. long, the 4 lobes 2 or 3 mm. long, spreading, acute. Seeds not numerous, strongly compressed, blackish, obscurely triangular in outline, 6 to 8 mm. broad.

Huachi, 1,800 feet, *O. E. White,* September 3, 1921 (*no. 1003*). The same species was collected by Dr. White without flowers or fruit at Rurrenabaque, 1,000 feet, November 25, 1921, as the host of a parasitic fungus (*no. 1806*).

Basanacantha mucronata

(Pistillate plant.) Nearly glabrous. Branchlets stout, terete, divaricate, gray, the flowers densely crowded at the summit. Stipules 6 or 7 mm. long, and nearly as broad, imbricated, brown, ovate, keeled, obtuse but with the end of the keel slightly projecting. Petioles about 1 cm. long, narrowly margined, slender, the blades to 12 cm. long and 6 cm. broad, ovate with the base abruptly contracted into a short and broad acumination and abruptly short-acuminate at the summit, which is minutely mucronate; entire, thin, bright-green on both sides. Secondaries

8 to 10 on each side, slender, lightly prominent on both sides, widely spreading, little curved, the venation obscure. Calyx-tube wanting, the lobes lanceolate, acute. Corolla fleshy, pilose, the tube 6 mm. long, filiform, the lobes 5 (occasionally 6), 2 or 3 mm. long, widely spreading, lance-oblong, strongly and sharply mucronate, the sinuses broad, obtuse. Stamens wanting. Stigmas exserted, large, capitate, 2-lobed. Fruit (immature) oval, more than 1 cm. long and nearly as broad, brown, minutely downy, tipped by the persistent calyx, much wrinkled and apparently fleshy and larger when fresh.

In the gorge of the Bopi River, 3,000 feet, *H. H. Rusby,* September 9, 1921 (*no. 555*). A small tree on the river bank, the white flowers very fragrant.

So far as can be determined from the material at hand, *Williams, 527,* from Tumapasa, 1,800 feet, December 13, 1901, is of this species. This specimen bears the mature fruit, which is nearly spheric, 2 cm. long and slightly broader, finely verrucose, the calyx wanting and the summit bearing an undulate annulus which is probably the disk, but may be the base of the calyx-limb.

Basanacantha macrocarpa

(Fruiting specimen.) Principal veins of the lower leaf surfaces roughish with few very short hairs. Branchlets slender, rigidly ascending, terete, gray, some spinose when young. Stipules 3 to 4 mm. long, thick and rigid, ovate, keeled, the keel extended into a pungent awn that is sometimes as long as the body. Petioles 3 mm. to 1 cm. long, margined. Blades 4 to 7 cm. long, 1.5 to 3 cm. wide, oval or slightly obovate, with slightly produced acute base and obtuse summit, entire, thin but rigid, pale-green, the midrib and secondaries lightly prominent on both sides, the latter 6 to 8 on a side, strongly falcate, the venation obscure. Fruiting pedicel 3 cm. long, stout, rigid and straight, spreading, thickened upward. Fruit nearly 6 cm. long, 1.5 cm. broad, oblanceolate, 10-costate, the ribs slender, the short-tubular portion of the calyx-limb persistent, the lobes broken off in my single specimen. Fruit 2-celled, many-seeded, the seeds horizontally attached to the thin septum, compressed, imperfectly triangular, nearly 1 cm. long and more than half as broad, dark reddish-brown, the surface minutely granular.

Rurrenabaque, 1,000 feet, *M. Cardenas,* October 12, 1921 (*no. 1261*). "A shrub in the forest."

My specimen of this plant is very imperfect, consisting of 2 branches, one leafy, the other bearing a single fruit. Its stipules are not typical of *Basanacantha,* but the fruit and seeds are.

Basanacantha mollis

(Pistillate plant.) Gray-pubescent. Branchlets rather stout, spreading, leafy and spiny only at the ends. Spines about 1 cm. long, pungent. Stipules 6 mm. long, ovate, thin, brown, nerved, keeled, cuspidate. Petioles 1 cm. long, broad. Blades to 1 dm. or more long and half as wide, abruptly short-acuminate at both ends, very thin, entire, or obsoletely dentate near the summit, pale-green above, gray beneath, the venation not prominent, the secondaries 10 or 12 on each side, widely spreading, then falcate. Cymes terminal, sessile, few-flowered. Pedicels filiform, 1.5 to 2 cm. long. Calyx-tube 3 mm. broad, shortly and broadly turbinate, 5-lobed, the lobes 3 or 4 mm. long, narrow with attenuate summit. Corolla-tube 2 cm. long, slender, narrowed upward, 10-sulcate, the limb 2 cm. broad, widely spreading. Anthers 2 or 3, imperfect, nearly sessile in the throat of the corolla, 3 mm. long, oblong. Stigmas 3, a little exceeding the stamens, 2 mm. long, shovel-shaped, the style filiform.

Rurrenabaque, 1,000 feet, *H. H. Rusby,* October 12, 1921 (*no. 1255*). "A shrub, in the forest."

Alibertia Tutumilla

Glabrous, excepting the flowers. Branchlets short, rather stout, reddish-brown, roughened with leaf scars, very leafy. Stipules nearly 1 cm. long, connate at the base, thin, brown, caducous, leaving a very shortly setose base surrounding the stem. Petioles nearly 2 cm. long, reddish, like the midrib, rigid, strongly channeled above. Blades to 2 dm. long, and 8 cm. broad, lance-oblong, the base tapering into the petiole, acuminate and acute at the summit, entire, thickish and rigid, deep-green, somewhat shining, the slender venation prominent beneath, the secondaries about 12 to 14 pairs, the lower opposite, more or less decurrent on the midrib, widely spreading, the outer portions strongly curved. Flower terminal, subsessile, solitary, subtended by 2 or more broadly ovate bracts resembling the stipules. Calyx-tube 7 mm. long, 5 or 6 mm. broad, obovoid, somewhat constricted at the summit, the limb about as long and broad, the base slightly dilated, darker than the upper cylindric

portion, which is finely many-nerved, truncate, with six extremely short lobes. Corolla minutely gray-downy on both surfaces, the tube 1 cm. long, stout, enlarged above, the lobes 1 cm. long, ovate, acutish, thick. Fruit nearly spheric, 4 cm. broad, on a stipe 5 mm. long and 1 cm. broad, dark-brown, glabrous, bearing the persistent calyx-tube, about 5 mm. long and broad, with a thick epigynous disk at its base. Pericarp crustaceous. Seeds imbedded in a pulp of peculiar, sweet and slightly acid agreeable flavor, the seeds lenticular, slightly obovoid, 7 mm. long, light-brown.

Rurrenabaque, 1,000 feet, *O. E. White,* January 27, 1922 (*no. 2354*). "A tree 30 to 40 feet high, in wet forest, and cultivated. Flowers bright creamy-white. Fruit much eaten by the natives, and tastes like axle-grease."

No. 2344, from the same locality, is the same in young fruit, which is called "Tutumilla" and is chocolate-colored when ripe. The young fruit is minutely muricate or granular.

CHOMELIA BREVICORNU Rusby, Bull. Torrey Club **52**: 140. 1925. (*No. 1282.*)

CHOMELIA MULTIFLORA Rusby, Bull. Torrey Club **52**: 141. 1925. (*No. 1365.*)

Mapouria (?) rigida

Glabrous, the branchlets rather stout, more or less roughened by the modified lenticels, very leafy. Stipules entire, acutish, about 5 mm. long, thick and rigid, deciduous and leaving a short-fimbricate, brown base. Petioles 5 to 8 mm. long, gradually broadening into the blades, which are 6 to 15 cm. long, 3 to 6 cm. broad, oblong, oval or slightly oblanceolate, with abruptly short-acuminate base and summit, acute or acutish, entire, thickish, rigid, the lower surface pallid, the venation slender, the secondaries about 10 or 12 on each side, widely spreading, then strongly falcate, the venation sparse, loosely anastomosing. Panicle terminal, lax, short and broad, about as long as the peduncle. Bractlets minute, subulate. Pedicels very short, stout, continuous with the short-turbinate calyx-tube, which is about 0.5 mm. long, the abruptly spreading, very short-toothed limb about 1 mm. broad. Corolla thickish, the tube campanulate-cylindraceous, 1 mm. long, slightly 5-angled, the throat campanulate, slightly longer and twice as long as broad, the lobes longer than the throat, ovate, acutish, at length strongly recurved. Stamens attached at the base of the throat, the fila-

ments short and slender, the anthers oblong, stout, extending above the base of the corolla-lobes. Style filiform, the summit thickened, the lobes about half its length, equaling the corolla-lobes, flattened, broadened upward.

Tumapasa, 1,500 feet, *M. Cardenas,* December 9, 1921 (*no. 1968*) ; also collected by R. S. Williams in the same locality, 1,800 feet, January 22, 1902 (*Williams, 566*).

Mapouria (?) costata

Closely and densely grayish-puberulent throughout, the upper leaf-surfaces minutely so. Branchlets stout, terete. Stipules about 1 cm. long, broadly ovate, obtuse, thickish, minutely ciliate. Leaves sessile or subsessile, 5 to 10 cm. long, 2.5 to 5 cm. broad, oval, obtuse or acutish, rounded to subcordate at the base, entire, thickish, rigid, the midrib and secondaries mostly narrowly grooved on the upper surface, very stout and prominent beneath, the secondaries 12 to 15 on a side, diverging from the midrib, almost at a right angle, the outer portions abruptly upcurved and connecting strongly close to the margin, connected by a stout and close anastomosis. Cymes terminal, shortly peduncled, the peduncle strongly costate, the branches peduncled, densely flowered toward the ends. Calyx campanulate, 1.5 mm. long and broad, very shortly 5-toothed. Corolla-tube campanulate, densely white-pilose within, about as long as the calyx, much shorter than the lobes, which are ovate, the upper two thirds much thickened, and dark-colored, the summits inflexed in the bud. Stamens attached in the sinuses of the corolla. Style short, stout, cleft nearly to the base, the branches thickened upward.

Near Reyes, 1,000 feet, *H. H. Rusby,* October 26, 1921 (*no. 1344*). "A low shrub with white flowers."

Psychotria ramiflora

Inflorescence minutely and sparsely puberulent. Branches elongated and slender, obtusely 4-angled and sulcate. Stipules 5 mm. long and nearly as broad, ovate, obtuse or acutish. Petioles (only the upper seen) 1 to 1.5 cm. long, the margins strongly upcurved. Blades 1 to 1.5 dm. long, 5 to 7 cm. broad, oval, very abruptly and shortly acuminate, obtuse or acutish, the base slightly produced into the petiole, entire, thin, deep green, all the venation slender, lightly prominent on both sides, the midrib

finely grooved above, the secondaries 10 or 12 on a side, mostly short-decurrent on the midrib on the upper surface, strongly falcate-ascending, the venation loosely and strongly reticulate. Panicles short or elongated, lax, long-peduncled like the branches and branchlets, the subulate acute spreading or recurved bractlets mostly about equaling the calyx. Flowers mostly two together, sessile or subsessile. Calyx little more than 1 mm. long and broad.

Corolla 6 or 7 mm. long, and half as broad, the lower third of the tube cylindric, only a third as wide as the campanulate upper two thirds, the short triangular-ovate obtuse teeth thickened and inflexed. Stamens attached at the base of the campanulate portion, the filaments very short, the anthers linear, extending to the base of the corolla-teeth, the filaments attached a little above the base. Style about equaling the stamens, somewhat clavate, stout, the branches about a fourth of the total length.

Rurrenabaque, 1,000 feet, *M. Cardenas,* November 26, 1921 (*no. 1852*). Species apparently near *P. luxurians* Rusby.

Psychotria viburnifolia

Pubescent, the upper leaf-surfaces shining. Branchlets weak, crooked, gray-brown, the lenticels much elongate transversely and very narrow. Stipules interpetiolar, single, ovate, 5 mm. long and broad, deciduous, leaving a shortly fimbriate base. Petioles 5 to 8 mm. long, stout, grooved above, the blades 1 to 1.5 dm. long, 3 to 5 cm. broad, thick and rigid, oblong, mostly inequilateral and slightly falcate, acute at both ends, gray-pubescent beneath, especially on the veins, shining above, where the midrib and secondaries are narrowly impressed, these strong and prominent beneath, the secondaries about 6 or 8 on each side, strongly ascending, the venation slender, crooked and coarsely reticulate. Inflorescence short-paniculate or corymbose, the panicles small, long-peduncled, the bracts subulate, acute, very small. Flowers not present. Fruiting pedicels short, thick, strongly angled. Young fruit short-ovoid. Calyx-teeth short, incurved, subulate.

Rurrenabaque, 1,000 feet, *M. Cardenas,* December 1, 1921 (*no. 1891*).

FARAMEA

This genus, which is very abundant in the Bolivian Andes, has come to be abundantly represented in herbaria, especially in

that of The New York Botanical Garden. One or more of the collections made by the author in 1886 and 1887 were referred by Dr. Britton to *F. salicifolia* Presl, which, in the flowering state, they very closely resembled. Later collections, made by M. Bang and others, very closely resembled the former. Not being well enough acquainted with the genus to know its tendency to variation within the species, *F. salicifolia* was regarded as a variable species, with many varieties or forms. A careful study of the material that has now accumulated under this name shows clearly that this view was erroneous, and that we have a group of species closely resembling one another, not one of them apparently representing the species to which they have been referred. *F. salicifolia* is a species of southern Brazil, and probably does not occur in Bolivia, being distinguished from all Bolivian species that I have seen by its strongly muricate fruit. The following species are proposed:

Faramea benensis

Glabrous. Branches obscurely quadrangular, the leaves divaricate. Stipules coherent into a ribbed cylinder 2 or 3 mm. long, bearing four setae nearly as long as the sheath. Petioles 5 to 8 mm. long, margined, the margins more or less incurved. Blades to 15 cm. long and 6 cm. broad, lanceolate, with the abrupt base slightly produced into the petiole and the summit acuminate and acute; entire, thin but rigid, bright-green, the midrib lightly prominent on both sides, the slender secondaries 8 or 10 on each side, diverging at a right angle but the outer portions strongly falcate-ascending and looped together at some distance from the margin, the venation inconspicuous. Cymes terminating the upper branchlets, compound, loosely flowered, peduncled, the peduncles or their branches angled. Pedicels 5 to 8 mm. long, slender, sharply angled. Calyx-tube 0.5 mm. long, cupulate, the limb rotate, about twice as broad as the tube, lightly 4-lobed. Corolla-tube 6 mm. long, the lower half narrower and its middle portion somewhat contracted, the lobes 4, half as long as the tube, of thick texture, oblanceolate, obtuse, the summit apparently bearing a black gland upon the inner face. Anthers reaching the base of the corolla-lobes, half as long as the tube, oblong, attached just above the base to a very slender short filament. Style filiform, longer than the corolla-tube, the style-branches short, slightly enlarged at the summit, obtuse. Epigynous disk large, tumid, blackish.

Rurrenabaque, 1,000 feet, *M. Cardenas,* November 24, 1921, (*no. 1773*). Fruiting specimens collected by the author in May, 1886, in Mapiri, 2,500 feet, Parke, Davis & Co. (*no. 2620*), and by M. Bang, in December, 1892, between Tipuani and Guanai (*no. 1684*), apparently belong to this species. The mature fruits are on spreading pedicels, 5 to 7 mm. long, and are 1.5 cm. broad, 8 mm. long and nearly as thick, transversely elliptical, dark-green and glabrous.

Faramea tenuifolia

(Fruiting specimen.) Glabrous. Branchlets elongate, slender, nerved, or the younger narrowly angled. Stipules connate, broader than long, papillose, aristate, the awns elongating, at length 4 or 5 mm. long. Petioles divaricate, 1 cm. long, including the abruptly produced base of the leaf, margined. Blades to 1 or even 1.5 dm. long, and 5 cm. broad, oblong or oval, with the base abruptly contracted into the petiole and an abruptly short-pointed and obtuse summit, thin. Cymes terminating the branchlets, slenderly peduncled, mostly simple and small, with mostly about 5 fruits. Pedicels very slender, 4 or 5 mm. long. Mature fruits about 6 mm. broad and 5 mm. high, bearing the shortly toothed calyx-limb, which is about 1.5 mm. broad, and surrounds the concave style base, the surface of the fruit being densley papillose or muricate. This is the only Bolivian species with muricate fruit that I have seen, but it is evidently quite distinct from *F. salicifolia.*

Rurrenabaque, 1,000 feet, *M. Cardenas,* January 21, 1922 (*no. 2048*).

Diodia rogaguana

Gray-hispid, with short divergent hairs, the stems elongate, stout, quadrangular. Stipules very unequal, filiform, rigid, pilose. Leaves sessile, 1.5 to 2.5 cm. long, 5 to 12 mm. broad, lanceolate to oblanceolate, obtuse or acutish, thickish, 5- to 7-ribbed, the ribs consisting of stout, rough-hairy secondaries, which are impressed above, very prominent beneath. Axillary whorls several- to many-flowered, the flowers closely sessile. Calyx-tube hemispheric, in flower shorter, in fruit longer than the four linear, thick, obtuse erect lobes. Corolla about as long as the calyx, the tube campanulate. Stamens exserted, incurved, the anthers short. Style exserted, bifid, the branches somewhat unequal. Fruit 2.5 mm. long and nearly as broad.

On the pampas near Lake Rogagua, 1,000 feet, *H. H. Rusby,* October, 1921 (*no. 1723 A*).

Borreria (?) nectarifera

Leaves, etc., scabrous, the internodes nearly glabrous. Stems occasionally nearly a meter high, slender, simple or little branched, the branches erect. .Internodes mostly longer than their leaves, quadrangular, the angles slightly winged. Stipular setae filiform, rigid, unequal, those nearest the leaves reaching 8 mm. in length. Leaves sessile, to 3 cm. long, linear-lanceolate, acuminate at both ends, obtusish, entire, margin strongly revolute, thick and rigid, the midrib very stout and prominent beneath. Cymes verticillate, very dense and many-flowered. Calyx-tube narrowly turbinate, the limb 4-parted, with several small intermediate teeth, lobes somewhat unequal, to 2 mm. long and a little longer than the tube, in fruit, lance-linear or subulate, rigid, whitish with a broad green midrib, obtusish. Corolla 3 mm. long, 4-parted nearly to the base, the lobes oblong, obtuse, white, bearing a brown gland in the center, above the middle. Anthers nearly sessile, in the sinuses, oblong, nearly 1 mm. long, oblong. One of the mericarps tardily dehiscent on the inner face.

On the pampas near Lake Rogagua, 1,000 feet, *H. H. Rusby,* November 4, 1921 (*no. 1659*). "Growing in water."

It would appear that a plant with a petaloid appendage of this kind should be generically distinct from *Borreria,* but all its other characters are in such close agreement with this genus that I scarcely feel disposed to separate it.

Mitracarpum simplex

Sparsely pubescent with short, white, mostly divergent hairs, the leaves somewhat strigose. Stems slender, obscurely quadrangular, more so above than below. Leaves sessile, 2 to 3.5 cm. long, 5 to 10 mm. wide, oblanceolate, acute or acutish, thin, light-green, the midrib and secondaries slender, the latter about 3 on each side, suberect. Cymes small, dense. Bracts coherent, about 3 mm. long, lacerate, the teeth acuminate and very acute. Bractlets setose, slender, acute, unequal, the largest to 3 mm. long. Flowers not dissected. Fruits shortly pedicelled, circumscissile at the middle or slightly lower, the calyx-tube short and broad, about as long as the teeth, which are very unequal, subulate, acuminate and acute, rigid, dark-green.

A single specimen collected in Bolivia on the Mulford Exploration, without locality or date (*no. 1993 A*).

Cucurbitaceae

Gurania plumosa

(Staminate plant.) Pilose throughout with long soft white hairs. Stems elongate, slender, green, deeply sulcate. Petioles about a fourth the length of the blades, their white shining hairs divaricate, like those of the stem, peduncles, etc. Blades varying from 20 cm. long and 14 cm. broad to 16 cm. long by 15 cm. wide, cordate with rounded sinus and lobes, the base slightly produced into the sinus. Broader leaves tending to be slightly 3-lobed, the others ovate, the summit abruptly contracted into a finely attenuate point 2 or 3 cm. long. Margin strongly ciliate and armed with scattered teeth which are reduced to very small divaricate points. Upper surface deep-green, rather sparsely clothed with the hairs described above, the lower surface gray-green, more densely clothed in the same way. Leaves 3- to 5-ribbed, the ribs lightly prominent, slightly keeled or 1- to 3-nerved, the remaining venation loose and weak. Peduncle slender, its length not determined, bearing a swollen point or articulation below the flowers, which are densely capitate, the calyx beautifully clothed throughout with very long, white, and shining divaricate hairs. Calyx-tube 6 mm. long, nearly 4 mm. broad, the teeth somewhat unequal, to 3 cm. long, of setaceous form. Petals less than half the length of the calyx-teeth, thick and rigid, somewhat recurved, somewhat united at the base. Stamens 5 mm. long, the anthers 3 mm. long, white, oblong.

Tumapasa, 1,000–1,500 feet, *O. E. White,* December 6, 1921 (*no. 1827*). "A vine, 15 to 20 feet long, on a tall tree in damp shady sandy loam. Calyx scarlet-orange, the corolla yellow. Juice not milky." Species very near *G. Andreana* Cogn.

Gurania annulata

(Pistillate plant.) Finely and closely tomentellate. Stems elongate, slender, sulcate, reddish, sparsely puberulent. Petioles somewhat shorter than the leaves, flattened, costate, twisted, dilated at the base, strongly channeled by the upturned margins. Blades 1.5 dm. long and a little broader, broadly cordate, 3-lobed. Base of blade triangular, a little wider than long, meeting the petiole slightly higher than the bases of the broadly rounded

basal lobes, strongly margined by the thick lateral ribs, the sinuses between it and the basal lobes broad and rounded, one more so than the other. Middle lobe of leaf about three fifths the length of the blade, its width a little more than half its length, somewhat narrowed at the base, abruptly short-acuminate and acute, sinuate-dentate, the sharp salient teeth much smaller than those of the outer leaf-margin. Lateral lobes inequilaterally ovate, broadest at the base, acute, the sinuses narrow, obtuse. Outer margin of leaf irregularly erose-dentate, the teeth broadly triangular, acute, divaricate. Upper leaf-surface green, minutely strigulose and slightly harsh, the venation not prominent, the lower surface gray-green, softly tomentellate, the venation lightly prominent, strongly, crookedly and coarsely anastomosing. Umbels sessile along and at the end of leafless branches. Bracts of the gray-tomentellate umbel unequal, elongate-subulate with attenuate summit. Pedicels elongating somewhat in fruiting, more or less flattened, scarlet, at least above, almost imperceptibly continuing into the base of the calyx and ovary. Calyx-tube, in the young flowering stage, 2 cm. long to the summit of the ovary, the throat above that portion 1 cm. long to the base of the lobes, the base of the throat bearing an annulus that is incurved over the summit of the ovary. Calyx-teeth somewhat unequal, to about 1 cm. long, subulate, attenuate and acute. Petals about half the length of the calyx-lobes, ovate, acute, thick. Young fruits oblong, about 3 times as long as broad, puberulent, bearing the flower, with its enlarged peculiar annulus.

Near Reyes, 1,000 feet, *M. Cardenas,* November 12, 1921 (*no. 1733*). "Climbing in copses of pampa."

Gurania latifolia

(Staminate plant.) Nearly glabrous. Stems elongated, very slender, very minutely and sparsely puberulent. Petiole about one third the length of the blade, green, flattened, dilated at the base, 3-ribbed on the upper surface. Blade shallowly and very broadly cordate, deeply 3-lobed, its length about four fifths of its breadth. Basal lobes very short and broad, rounded, the base of the blade slightly produced into the sinus, shortly and broadly triangular, margined by the lateral ribs. Middle lobe ovate-oval, half as wide as its length, the base contracted to about half-width, the summit very abruptly contracted into a very short acute point, the margin sinuate-dentate, the teeth nearly obsolete. Sinuses open but not wide, obtuse. Lateral lobes inequi-

laterally ovate, with summit and margin the same as those of the middle lobe. Leaf thin, green above and almost imperceptibly strigulose, pale or gray-green underneath, slightly papillose-roughened, the slender venation slightly prominent. Tendrils green, flattened, the margins thickened. Peduncles rather short (7 to 10 cm. in my specimen), divaricate, ribbed, a concave brown gland near the base. Flowers densely racemose, the scars, after their fall, enlarging into light-brown nodose bodies. Bracts 5 to 8 mm. long, ovate, acute. Flowers 1 to 1.5 cm. long, according to their age, the tube twice the length of the limb, ventricose, contracted at the summit. Calyx-lobes ovate, acuminate and acute, erect or slightly spreading, 2 of them a little larger than the others. Petals shorter than the calyx-lobes. Filaments very short, the anthers about equaling the petals, narrow, acuminate with a short white flattened obtuse terminal appendage.

Above Cochabamba River junction, near Covendo, 2,000 feet, *O. E. White,* August 26, 1921 (*no. 917*). "A vine, 10 to 20 feet long, with milky juice, in deep damp shady woods, in sandy loam. Flowers orange-colored."

There is a possibility that this is the male plant of *G. annulata,* although the characters of bracts, calyx-lobes, and especially of the inflorescence, lead to a different conclusion.

Carduaceae

Erigeron senecioformis Blake, Proc. Biol. Soc. Wash. **36**: 51. (*No. 1206.*)

Aspilia lucidula Blake, Proc. Biol. Soc. Wash. **36**: 52. 1923. (*No. 758.*)

Calea rhombifolia Blake, Proc. Biol. Soc. Wash. **36**: 53. 1923. (*No. 2164.*)

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New names and final members of new combinations are in **bold face** type.

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